GENUS TRAINING

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Genus Training

- **Operation of Genus**
- **Microwaves**
- **Genus Technology**
- **Overview**
- **Troubleshooting**
- **Safety**

- User Manual
- Special Functions
- What and How ?
- Measuring Microwave Power
- Leakage Measurement
- Differences
- Mechanical Build
- Wiring and Circuit Diagrams
- Flowchart
- Component Check
- Do’s and Don’ts

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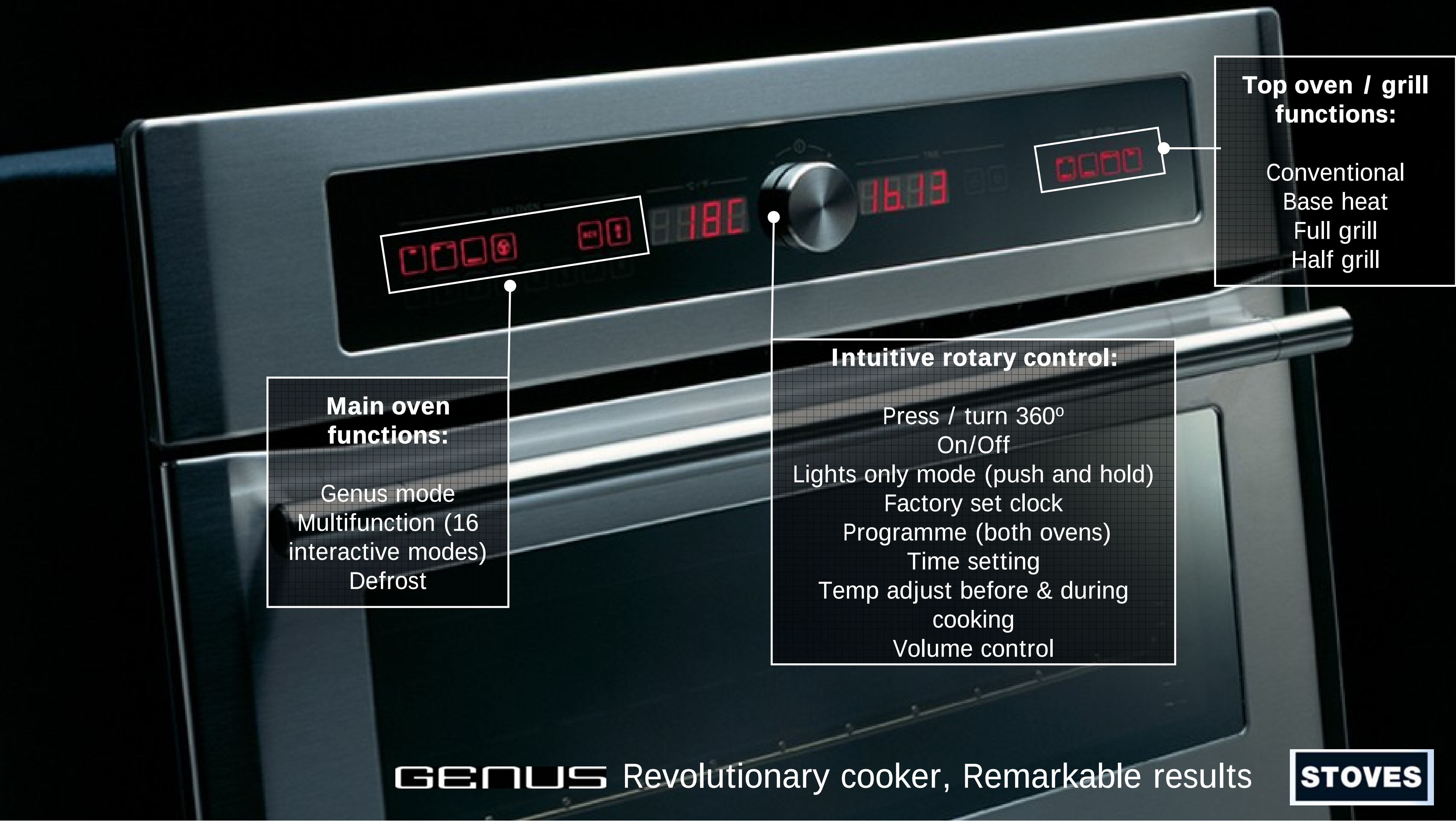
Operation of Genus

THE TECHNOLOGY - GENUS



Special Functions

- To access special functions depress the centre control knob. All available icons will illuminate in red.
- G functions 1-8 can be activated for special functions by touching and holding the numbered icon for 5 seconds.

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Special Functions

- G1 – Microwave Power Test
  Runs Microwave power for 170 seconds
- G2 – Auto Sequence Test Mode
  Runs through each relay/triac operation and displays expected power output
- G3 – Manual Sequence Test Mode
  As above but can be switched manually through each one using rotary control knob
- G7 – Demonstration Mode
  Appliance operates as normal but switches no relays on. Can be operated from a 13A Plug (3A Fuse)
- G8 – Volume Control
  Will operate audible tone and allow the volume to be changed using the rotary control.
- Lights only mode – Press and hold centre control knob for 10 seconds.

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Special Functions G2 and G3

Component	Left Hand Display	Right Hand Display
Frequency Stirrer	t1	58
T O Lights	t2	50
Cooling Fan	t3	70
Convection Element	rl1	2300
M O Grill Inner Element	rl2	1800
T O Grill Outer Element	rl3	1000
M O Grill Outer Element	rl4	1000
M O Base Outer Element	rl5	1000
Low Microwave	rl7	540
Medium Microwave	rl8	1000
High Microwave	rl9	1600
T O Grill Inner Element	rl12	1800
T O Base Element	rl15	765
M O Lights	t4	20
Software	4-00	

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Setting The Clock

- Depress the centre control knob
- Touch and hold the ‘Cook Time’ Icon
- The display should flash ‘Year’ ‘2005’
- Note: If the display flashes ‘Year’ ‘2000’ this is an indication that the battery is flat
- The display will then go through each of the set parameters in turn.
- These can be adjusted by rotating the central control knob

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Setting The Clock

- The display will show the following:-
- 'YEAR' – Set Year
- 'Cal' – Set Month
- 'Day' – Set day of week (00 – Sunday)
- 'Date' – Set Date
- 'Hour' – Set Hour
- 'Blank' – Set Minute

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Microwaves

What are they and How do they cook?

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What are Microwaves

- Electromagnetic Radiation
- Energy rays that are either reflected or emitted as radiation by objects. X-rays, ultraviolet light, visible light, near-infrared light, and heat (thermal) radiation are different wavelengths of electromagnetic energy.

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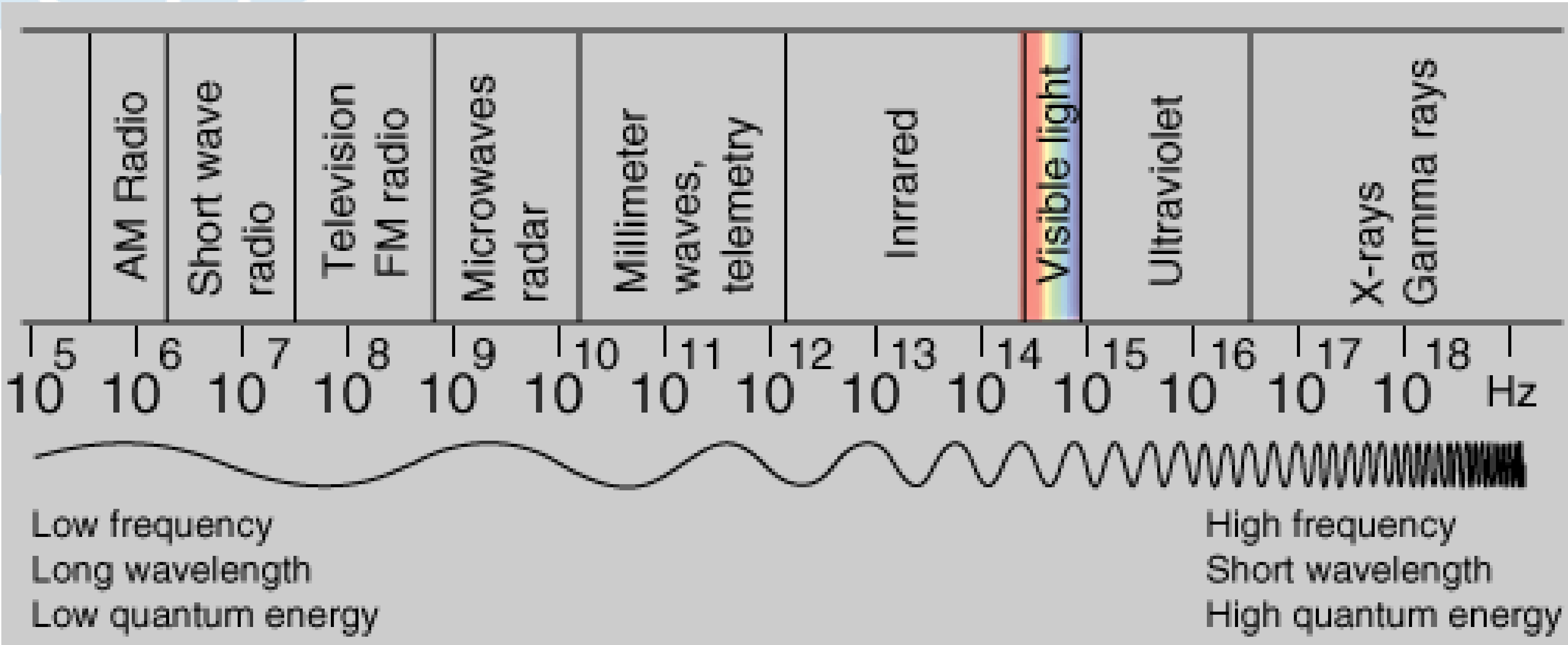
Electromagnetic Spectrum



Conduct through free air

Effect of Electromagnetic Radiation

- Higher frequencies have higher quantum energy – Ionising Radiation
- Ionising Radiation - Any form of radiation that has sufficient energy to remove electrons from atoms, so producing charged particles called ions. Short wavelength electromagnetic radiation (ultraviolet, X-rays and gamma rays).
- Lower frequencies have low quantum energy - Non Ionising Radiation
- RF and Microwaves do not have sufficient energy to remove electrons from atoms.

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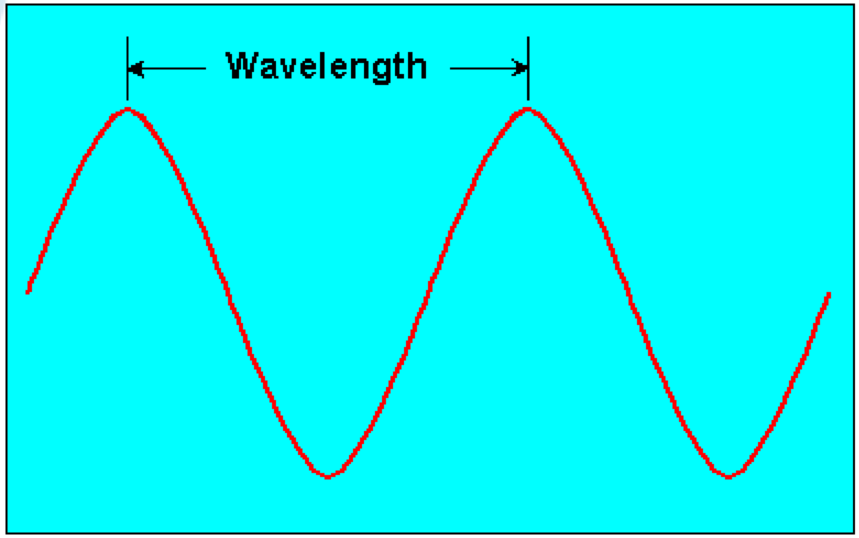
Wavelength Calculation



$$c = \nu\lambda$$

Also commonly written $v = f\lambda$

velocity = frequency x wavelength

Speed of Light C = 3 x 10^8 m/s (299,792,458 m/s)

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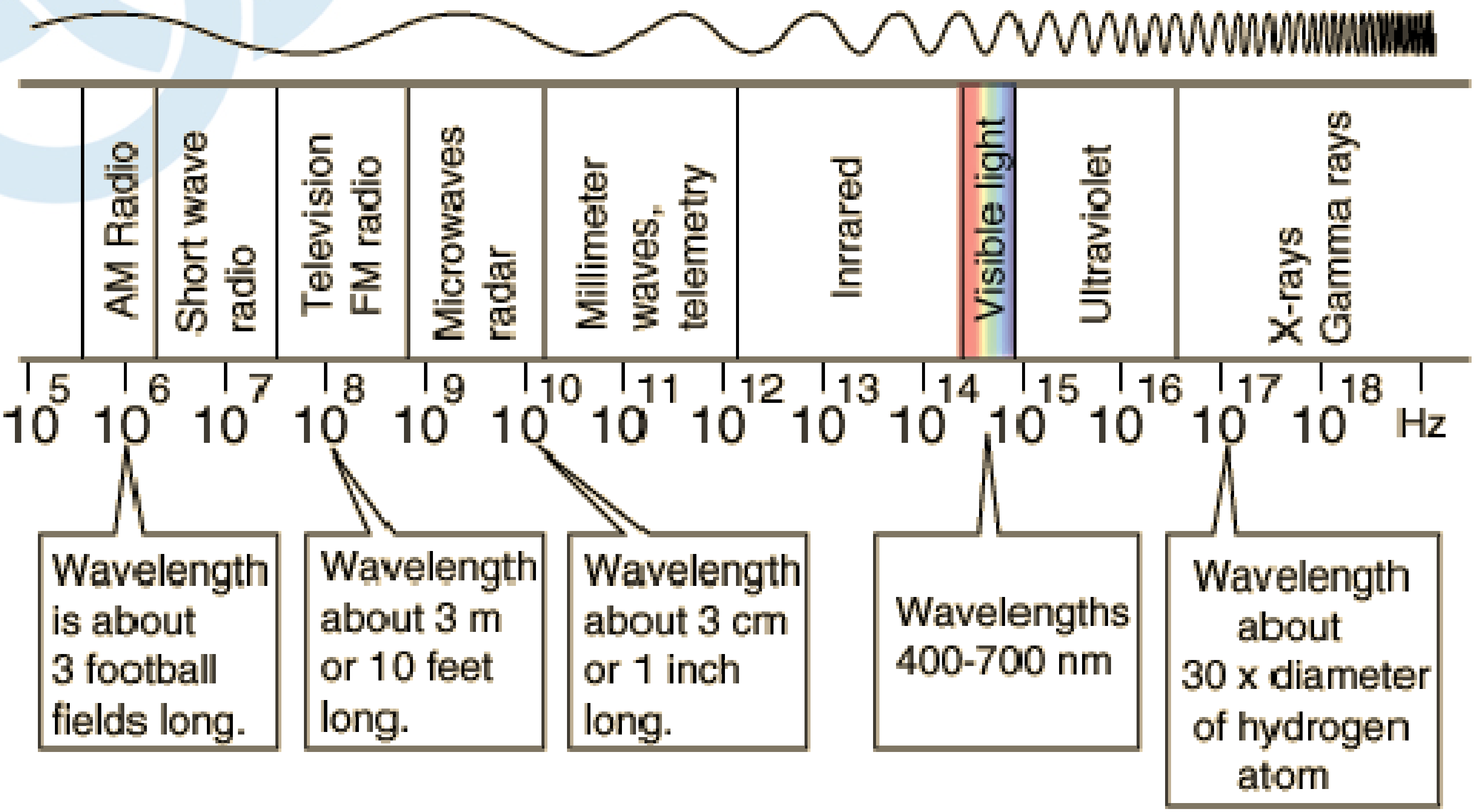
Wavelengths



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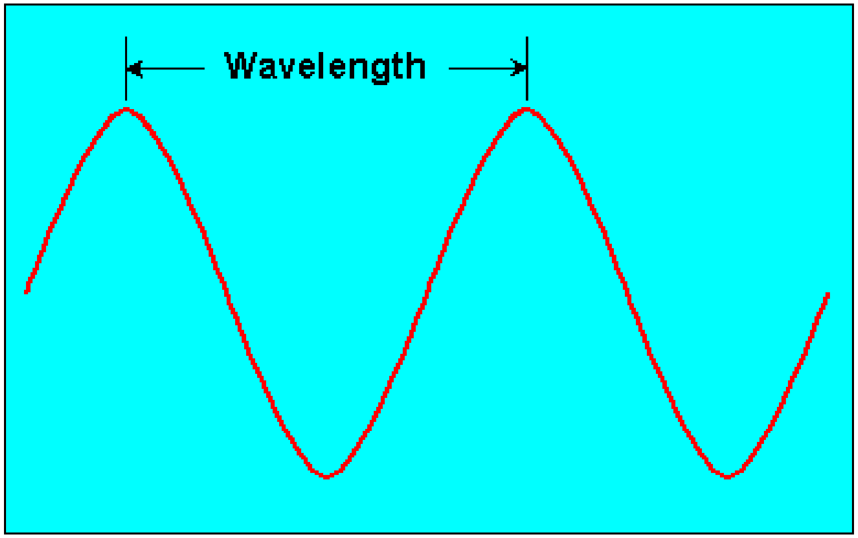
Microwave Wavelength

299,792,458/2,450,000,000=

122.36 mm



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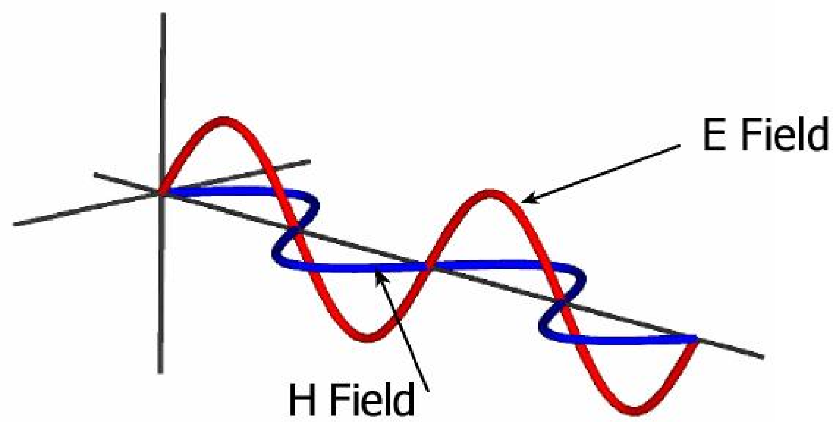
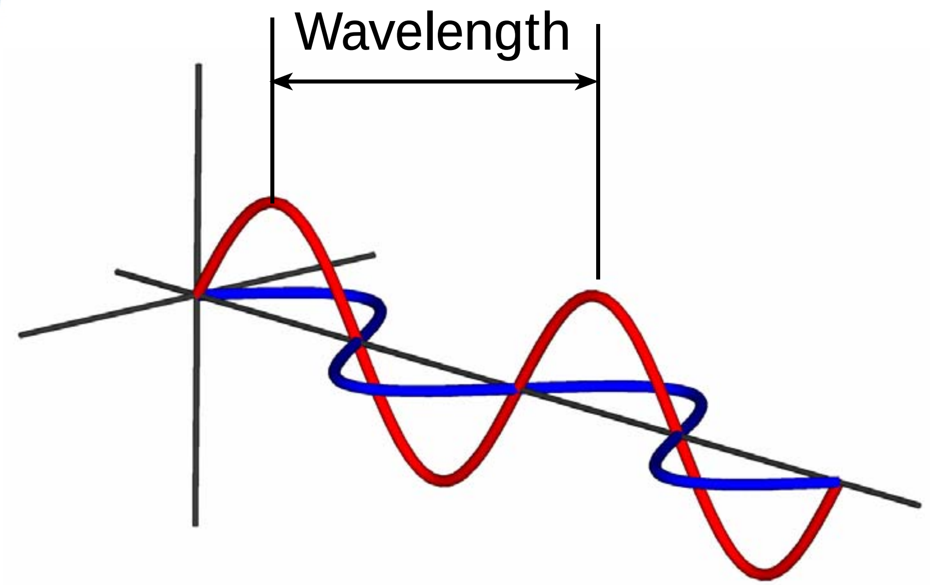
Electromagnetic Radiation



- E Field- This is the electric part of the wave. It causes arcing in metallic objects and causes intense hot spots in the cavity and is suppressed. It is measured in volts

- H Field- This is the magnetic part of the wave. It does not cause arcing and distributes the energy more evenly around the cavity, creating fewer hot spots. It is enhanced in the cavity.

Electromagnetic Radiation



- Wavelength. This is the distance from one point in the wave to the same point on the next wave. A peak to a peak, or trough to a trough or any point in between. It is a measure of the 'size' of the wave. The shorter the wavelength, the smaller the objects it affects.

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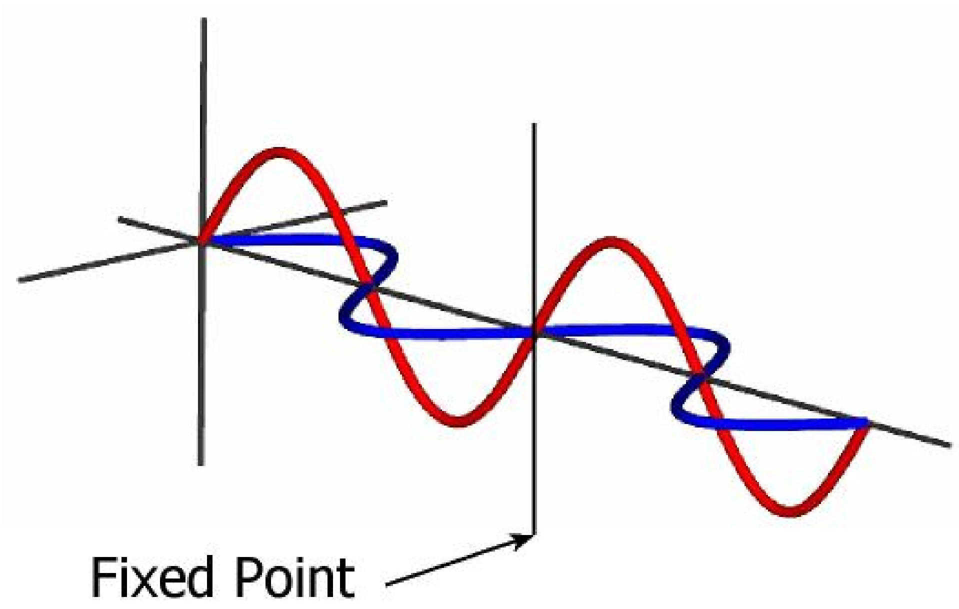
Electromagnetic Radiation

- Frequency.
- This is the number of complete waves that pass a specified, fixed point in one second. The frequency of microwaves is 2.45GHz. That means that 2,450,000,000 waves pass a specified, fixed point in one second.

- Because the speed of electromagnetic waves is set at 3 million metres per second, and the speed of a wave is the frequency multiplied by the wavelength, if the frequency of an electromagnetic wave changes, so must the wavelength.



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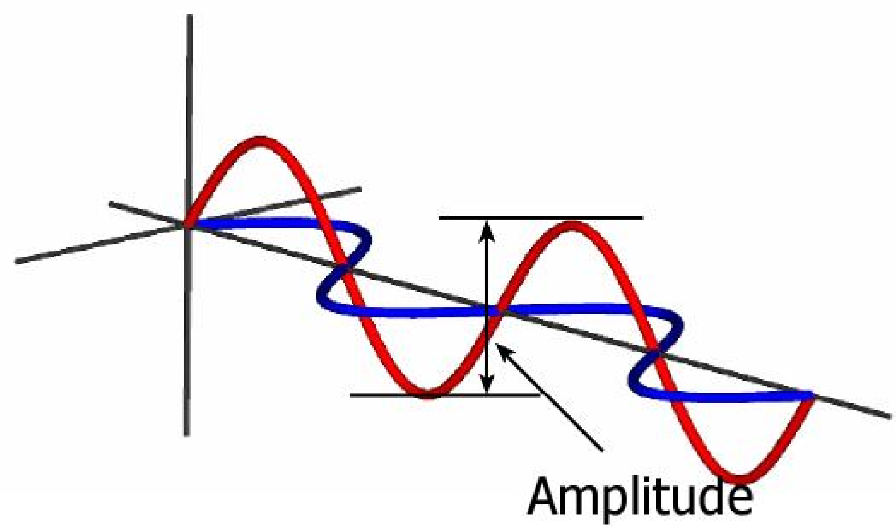
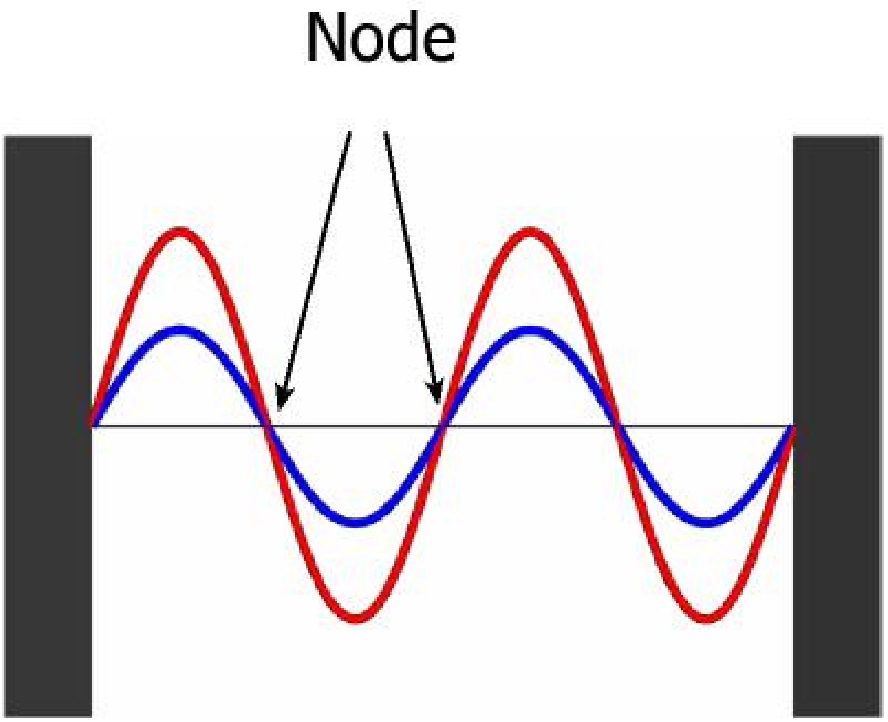
Electromagnetic Radiation

- Amplitude.
- This is the vertical distance from the top of one peak of a wave to the bottom of a trough. It is a measure of the energy in a wave.
- A wave with a large amplitude has a larger energy than a wave with a smaller amplitude.



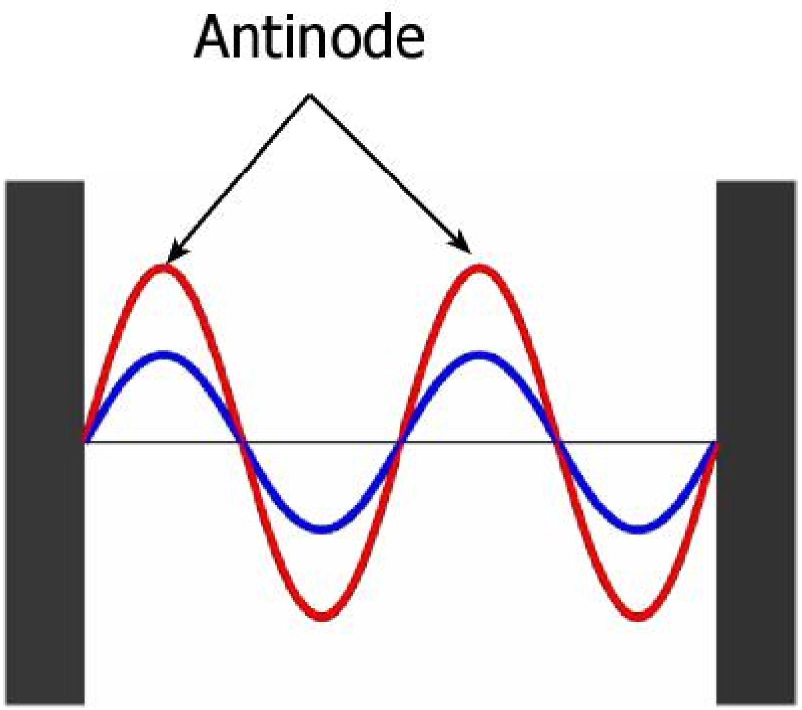
Electromagnetic Radiation

- Node.
- In a standing wave, the area of minimum displacement is called a Node. This is where the two waves interfere with each other to produce an area of no displacement. That is, the amplitude is zero.
- At these points there is no heating effect.



Electromagnetic Radiation

- Antinode.
- This it the opposite of a node. This is where the two waves interfere with each other to produce an area of maximum displacement, one that is twice the amplitude of one wave on its own.
- This is an area of maximum heating effect.



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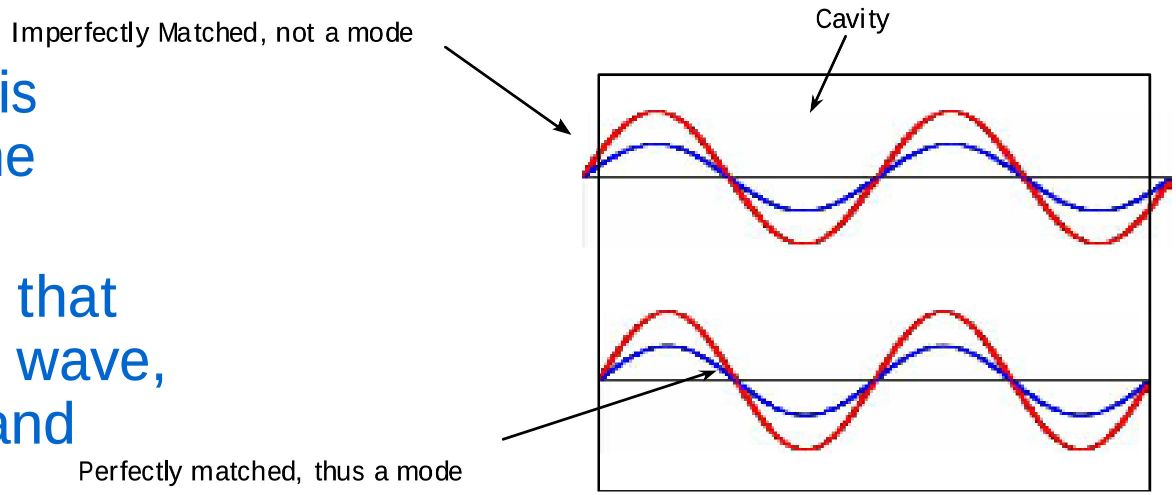
Electromagnetic Radiation

- Modes.
- A mode is a wave that is perfectly matched to the space it inhabits.
- Thus a mode is a wave that has become a standing wave, and as such has node and anti-nodes.
- The more modes than can be created in a cavity, the more anti-nodes there will be and as such the energy will be distributed amongst more hot spots, decreasing their intensity.



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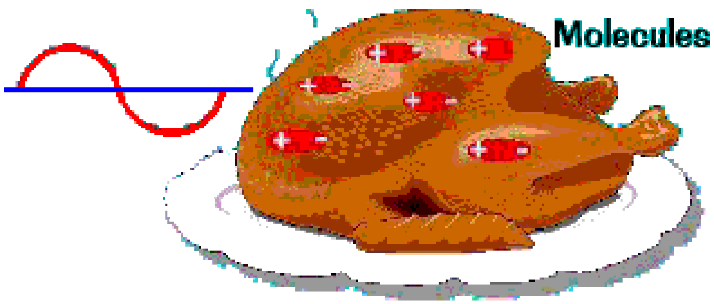
How Do Microwaves Cook ?

- Microwaves have a frequency of 2.45 GHz (2,450,000,000 times a second)
- Food is made up of molecules with positive and negative parts which act like little magnets



- As the microwave energy switches from positive to negative so do the molecules in the food. As the molecules flip back and forth friction occurs causing heat.

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Measuring Microwave Power

- Using two microwave safe containers place 1 litre of water in each (2 litres total)
- Take the average temperature of the water in both containers to 0.1°C (T1)
- Place the shelf on level 6 (from bottom) and place the jars in the centre of the shelf
- Switch on the appliance and use Special Function G1
- The appliance is automatically set to run for 170 seconds
- When complete take the average temperature of the water in both containers (T2)

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Measuring Microwave Power

- Use the following formula to calculate power of microwave :-

$$\text{Power (W)} = \frac{4.187\text{(Joules)} \times 2000\text{(Quantity of Water)} \times K\text{(T2-T1 Temperature Rise)}}{167\text{(Magnetron on time – allows 3 second warm up)}}$$

- Typical value for 900 Genus will be 500 – 550 Watts

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Microwave Power

- A number of factors will determine the microwave power output :-
- The supply voltage.
- The metal to metal connections within the cavity i.e good continuity between metal parts will result in higher output power. In particular those parts closest to the launch system.
- Excessive leakage from around the cavity.

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Electromagnetic leakage

- Leakage is prevented from the cavity by:-

1. The cavity itself reflects the Electromagnetic radiation.
2. Any point there is a possibility of leakage ie through holes from RTD and Element connections a metallic mesh washer is placed.
3. The door is sealed using an electromagnetic leakage prevention system (choke)

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Electromagnetic Leakage System

- The system works by 'shorting out' electromagnetic energy at the point of egress from the appliance.
- Fig 4 shows that zero power will exist at a half a wavelength away from an imposed short circuit.
- Physics state that, over a frequency range of 2.435-2.475 GHz, the half wavelength dimension is 60-62mm (average 61mm)

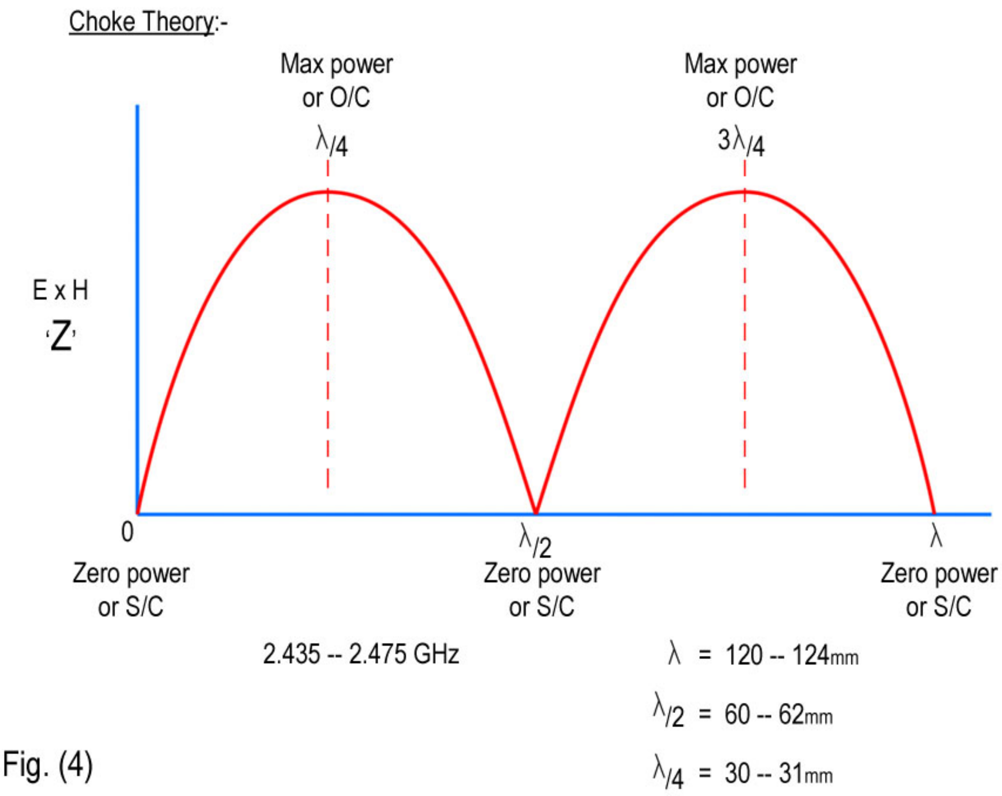

Fig. (4)

Electromagnetic Leakage System

- Fig. 1 Primary Choke
- Location 1 shows the gap between the cavity and the choke ditch.
- The three lines are 61mm long and we impose the required short circuit condition at location 1.

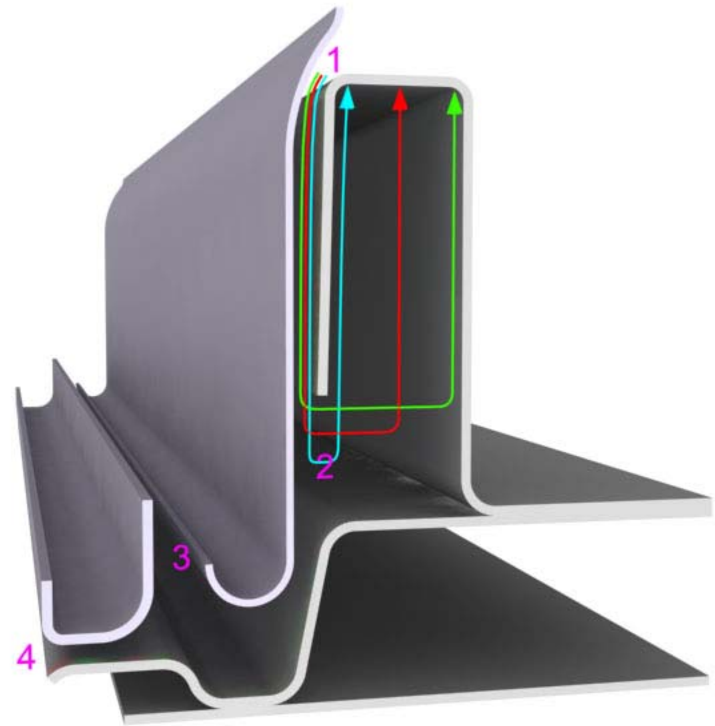

Fig. (1)

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Electromagnetic Leakage System

- Fig. 2. Secondary Choke
- Location 3 shows a gap between the cavity and the outer shell. This gap also needs to be a magnetic short circuit so as to absorb any microwaves that were not absorbed by the primary choke, due to manufacturing tolerances.
- The three lines are again 61mm long and using the same condition of the bottom of the choke ditch, we impose the required short circuit condition at location 3.

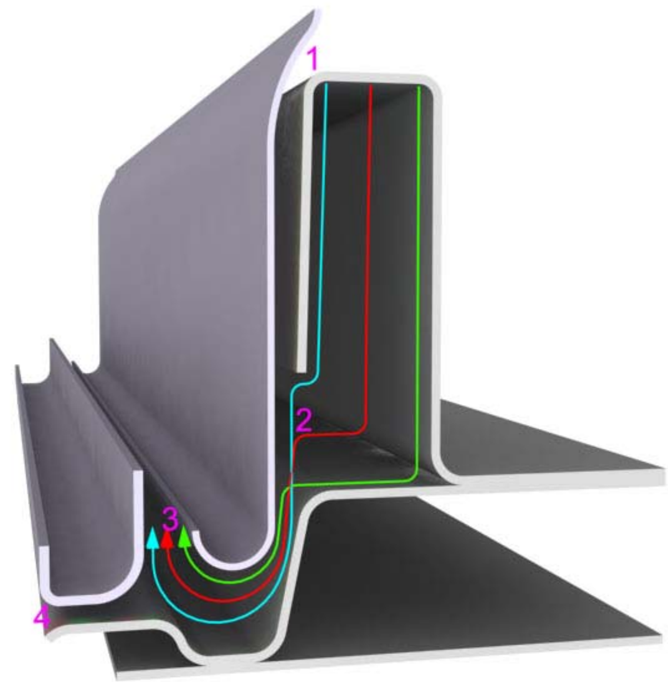

Fig. (2)

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Electromagnetic Leakage System

- Fig 3 Choke 3
- Short circuits at points 1 and 3 result in a short circuit at point 4.

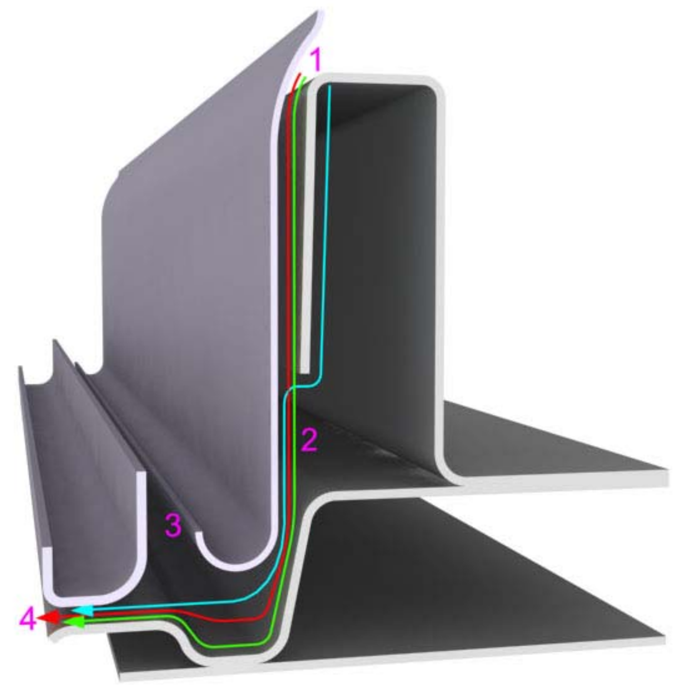

Fig. (3)

Microwave Leakage Measurement

- The power density of microwaves is determined my measuring the amount of energy that flows through one square centimetre in 1 second.

- For our purpose we will be measuring values in mW/cm^2 using an Apollo x 10 Microwave Monitor.

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Microwave Leakage

- Microwaves disperse and dissipate very quickly in the atmosphere
- The exposure to microwave drops by the square of the distance you move away
- E.g. if you are exposed to 5mW/cm^2 at 50mm and then move to 500mm (10x) the exposure will drop by a factor of 100 0.05mW/cm^2

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Microwave Exposure

- Microwaves act by depositing energy within the material and so far as the human body is concerned, the difference between exposure to infra-red frequencies (radiant heat) and microwaves is that the former produces surface heating while the later is absorbed within the body tissue thus raising its bulk temperature. Thermal damage has been shown to occur at radiation intensifies of 100 mW/cm^2 and above.

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Microwave Exposure

- In 1960 the Post Office published a guide called "Safety Precautions relating to Intense Radio-Frequency Radiation". This recommended a maximum safe working level of 10 mW/cm^2**,** thereby setting a safety factor of 10.
- A committee of the Medical Research Council carried out a review in the late 1960s and their report in 1970 confirmed the 10 mW/cm^2 limit for continuous exposure of personnel. It also laid down parameters for short periods of exposure at higher levels.
- Current draft proposals by the National Radiological Protection Board for "The Health Protection of Workers and Members of the Public against the Dangers of Extra Low Frequency, RF and Microwave Radiations" recommend the retention of the 10 mW/cm^2 level for the microwave frequency band for the continuous exposure of adults. A lower figure of 5 mW/cm^2 is proposed for the general public.
- British Standard BS 5175 : 1976 and International Electrotechnical Commission Standard IEC 335:25 requirements specify maximum leakage rates from a microwave oven in service, of not more than 5 mW/cm^2 at 5 cm from any surface of the oven.

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Microwave Leakage Measurement

- From BS EN 60335-2-25:2002 - 275g of water placed in the cavity within a borosilicate glass vessel (Pyrex)
- Appliance operated on max microwave power (Special function G1)
- Detector moved around external surface of appliance particular attention to door seal and corners.
- Maximum allowed leakage 50W/m^2 (5mW/cm^2)

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Genus Technology

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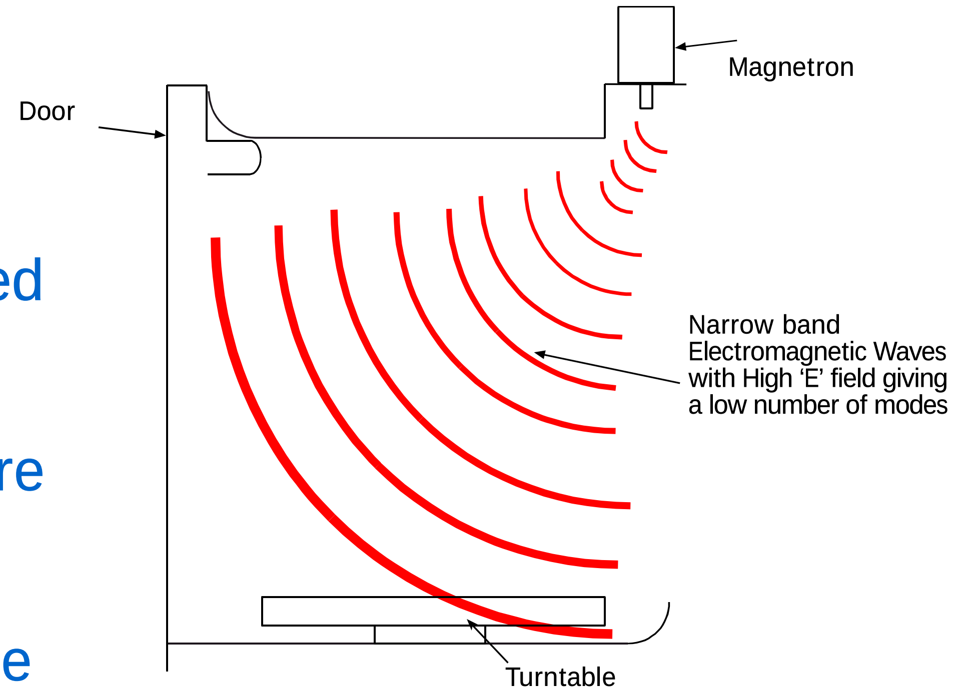
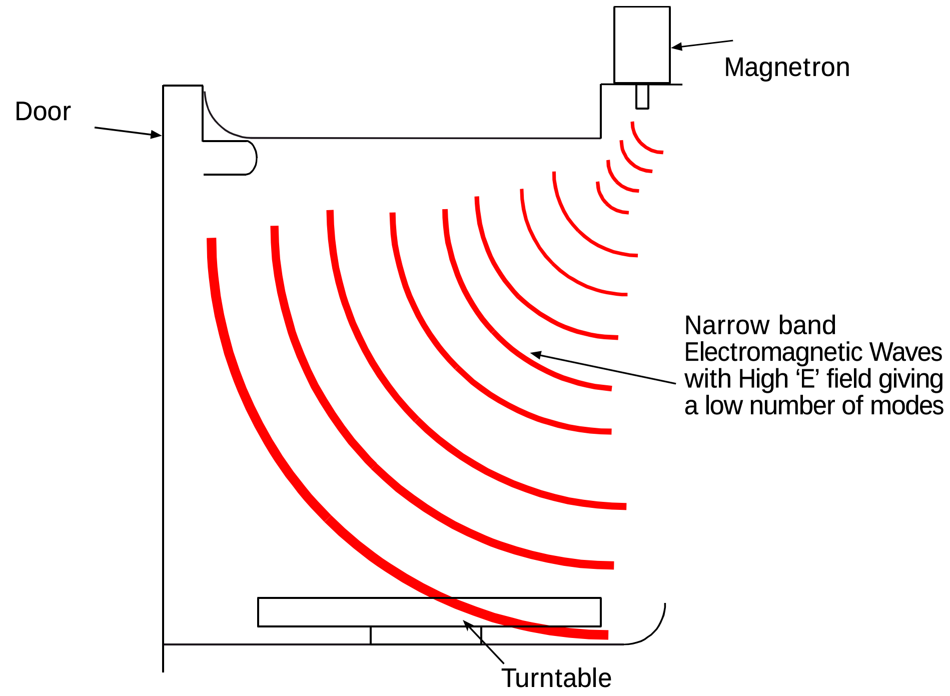
Conventional Microwave

- In the conventional microwave, the electromagnetic waves generated by the microwave generation circuitry have a frequency of 2.45GHz with a narrow bandwidth. These electromagnetic waves are guided directly into the oven. As the frequency bandwidth is narrow, only a small number of modes are produced. A mode is the name we give to a wave that is matched to the dimensions of the oven.



Conventional Microwave

- These electromagnetic waves also have a very high E field, that is the electric part of an electromagnetic wave.



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Conventional Microwave

- Some of the problems associated with conventional microwaves are:

1. A small number of modes means a small number of intense hot spots. Conventional microwaves usually incorporate a turntable to try and improve the cooking performance by evening out the heating by rotating the food through the hot spots. However it does not reduce the intensity of these hot spots which damage the structure of many foods being cooked.

2. The high E field means that metal objects can cause arcing (sparking) in the oven, making them very problematic to use.

3. Launching the microwaves directly into the oven means that the quantity, size, shape etc. of food substances changes the performance of the oven. It also means that some types of food can deprive others of energy; especially when some of the foods are frozen. Also, running the microwave oven with nothing in the oven can damage the magnetron through overheating.

4. In many conventional microwave ovens it is not possible to vary the amount of power produced by the microwave generation circuitry, instead they have to pulse the power to achieve a similar, reduced effect, however the damage caused by the hot spots is still the same.

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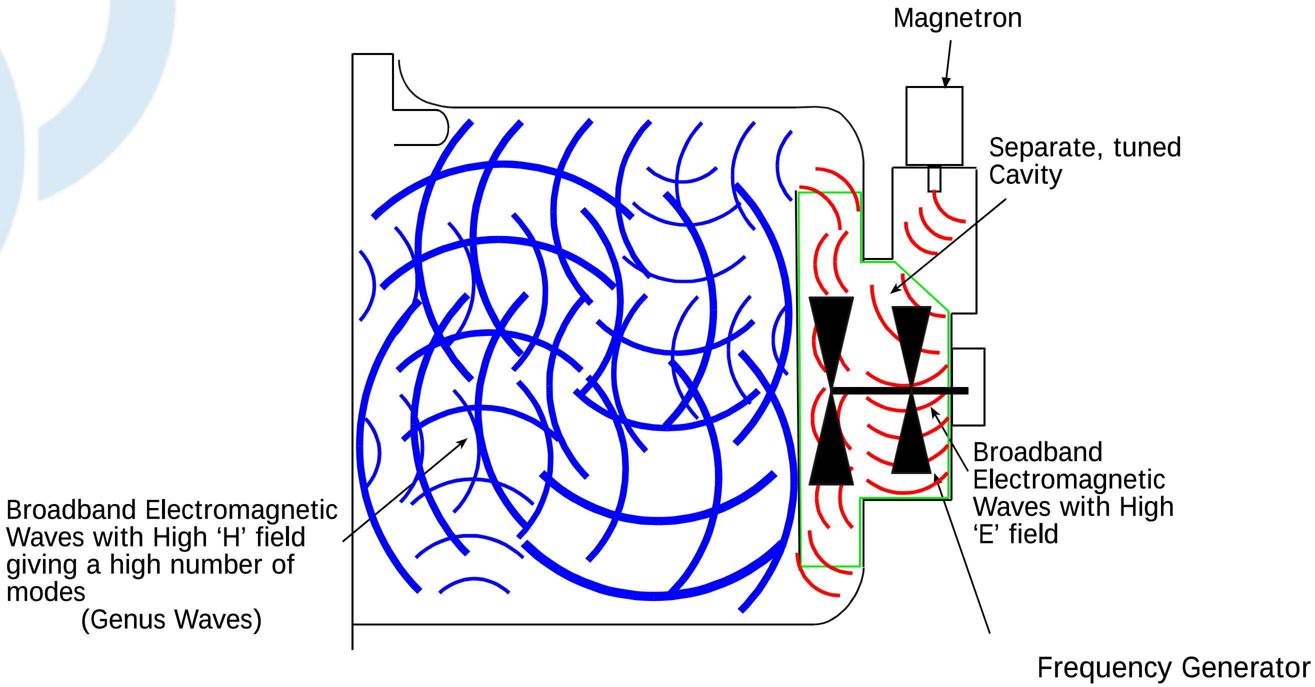
Genus Oven



- In Genus the electromagnetic waves are launched into an innovative and patented, separate tuned chamber that contains a frequency stirrer.

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Genus Oven

- This gives Genus the following advantages:

1. The frequency stirrer increases the bandwidth of the electromagnetic field which means that the number of modes in the oven are significantly increased, reducing the intensity of the hot spots and eliminating the need for a turntable.

2. The chamber is designed such that the electromagnetic waves emitted from it have enhanced H field, that is the magnetic part of the electromagnetic wave, and suppressed E field. This increases the cooking performance and solves the problem of arcing between metal surfaces.

3. The separate chamber creates a constant load which means it is possible to run Genus with nothing in the main oven without the danger of overheating and damaging the magnetron. It also means different types of food can be heated together without affecting the overall cooking performance.

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Genus Oven

- The electrical circuitry in Genus uses the resistance of the heating elements to reduce the power developed by the magnetron, meaning the power levels can be reduced without pulsing.

- Definition of the Genus wave is an electromagnetic wave of frequency 2450MHz with a broad bandwidth of +/-40MHz having a high 'H' field and a low 'E' field.

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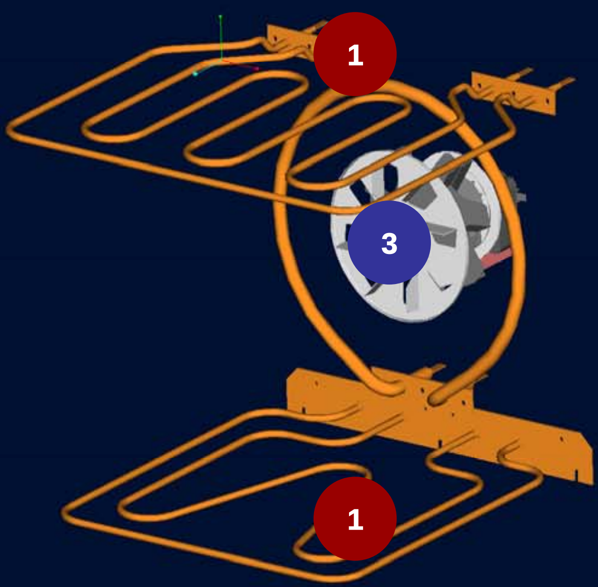
THE TECHNOLOGY – Conventional ovens

Most of today's ovens use three cooking methods to cook food…

1. Radiant heat
2. Conduction
3. Convection

Food is heated from the outside inwards, which is problematic in that it over-cooks the exterior before it cooks the interior.

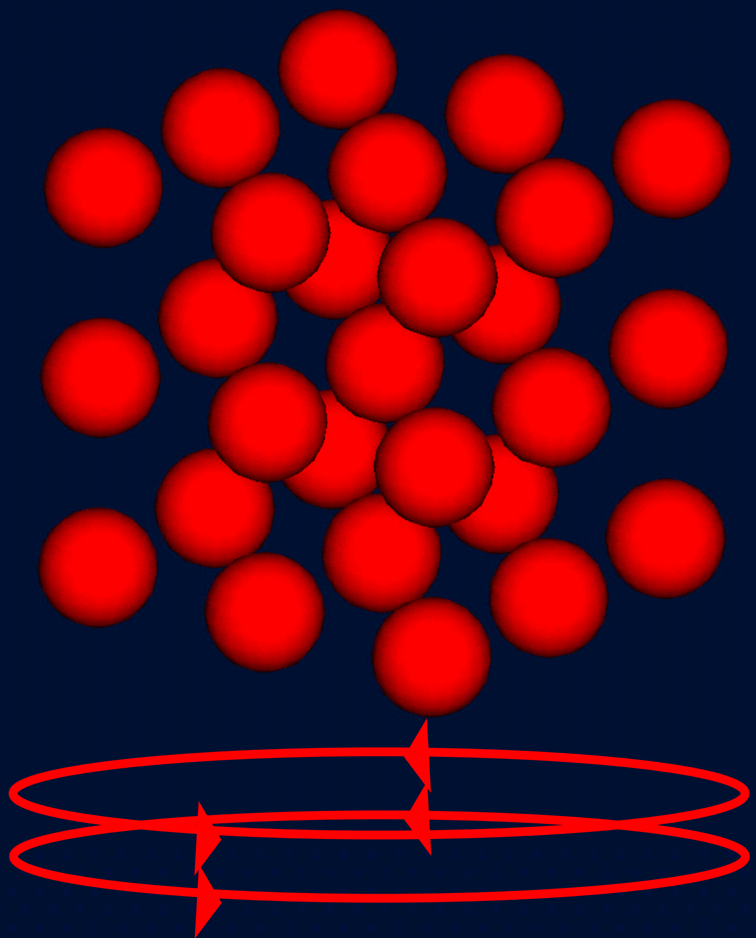


One way round this is to cook food very slowly using much lower temperatures.

Conventional cooking is very inefficient as only **5 %** of the energy is actually used in cooking the food.

This causes problems as the heat escapes through the cavity, doors, ventilation, the kitchen units and into the atmosphere.

THE TECHNOLOGY - Microwaves



◀ Microwaves would look a bit like this

They generate hot spots & need a turntable to drive the food through these hot spots

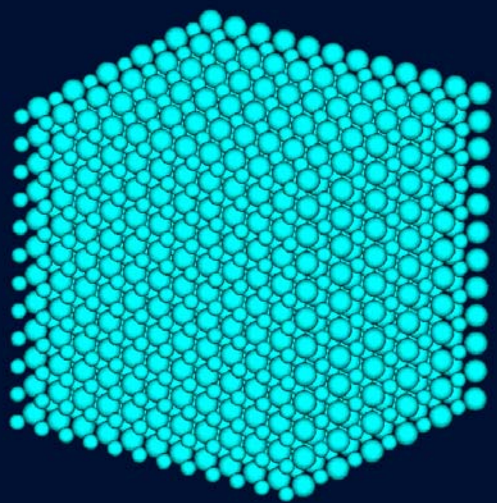
The problem with them is they are very selective and uneven in what they cook

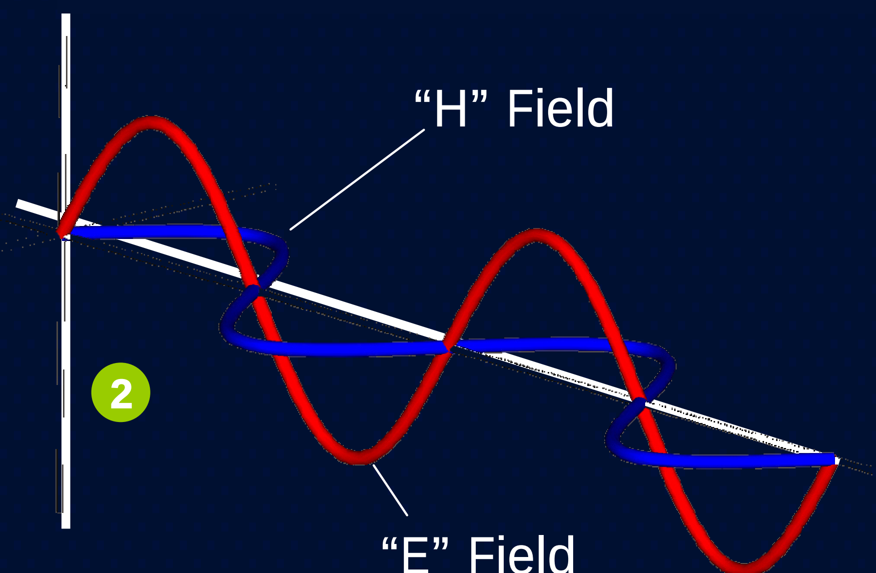
Cooking results are inconsistent at best

The electro-magnetic waves used in a conventional microwave have a stronger electric “E-Field”. This causes arcing (sparking) with metal objects such as baking trays / cutlery

THE TECHNOLOGY - GENUS

1





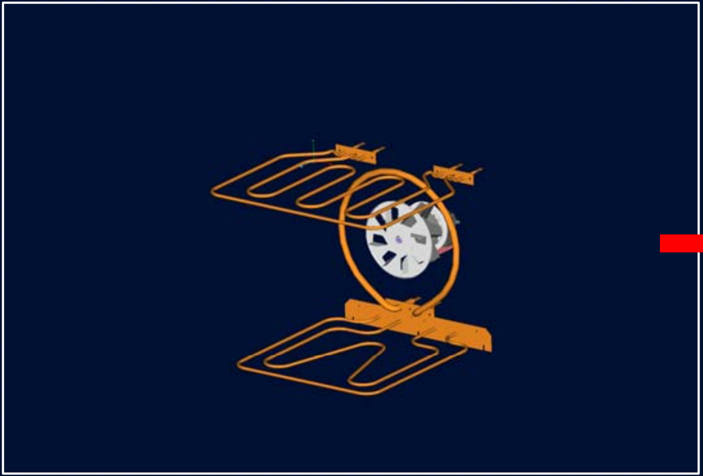
GENUS waves are different in two main ways:

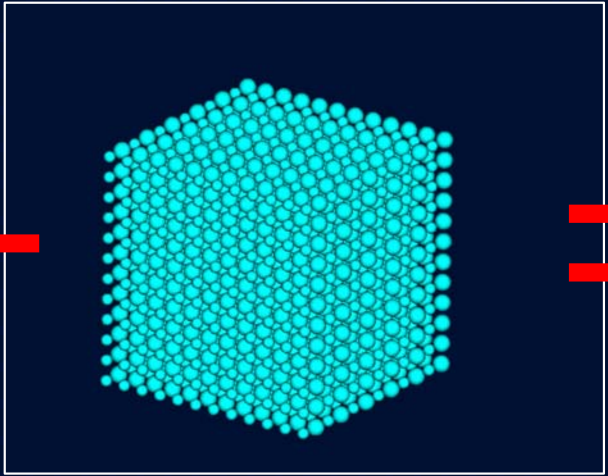
1 The Genus wave creates a myriad of tiny, compact balls of energy. This enables the food to be cooked in a more consistent way, without the need for a turntable.

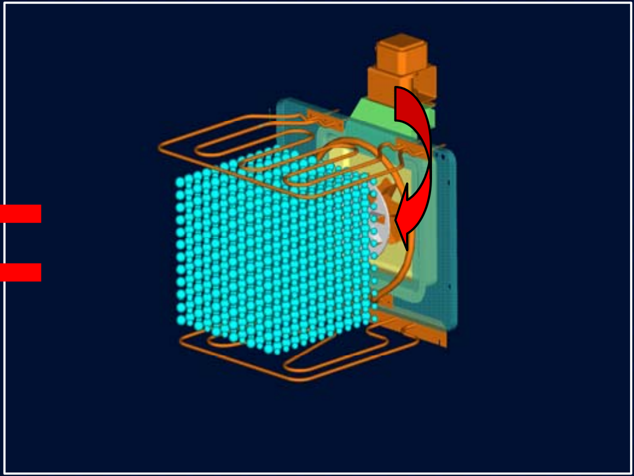
2 Genus suppresses the "E" field and amplifies the "H" field. This improves the cooking results and allows the use of metal dishes / trays.

THE TECHNOLOGY - GENUS

- How Genus works...







Conventional cooking
base & top heat

Fanned
+ fanned heat

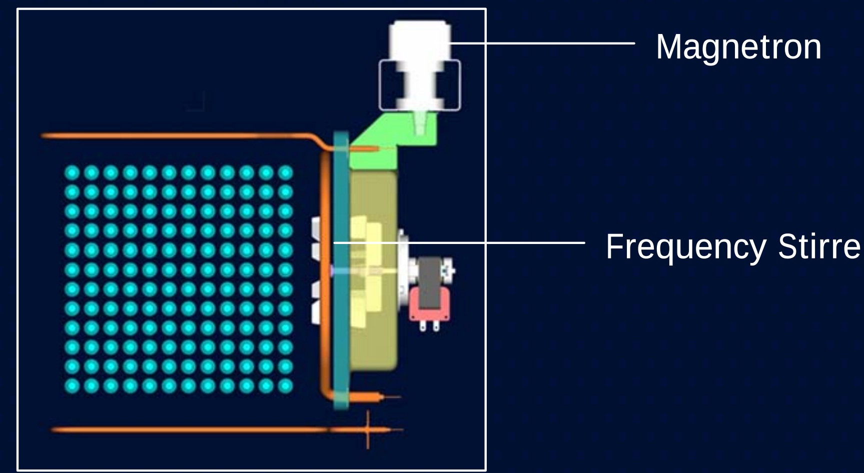
Genus therefore operates automatically as a multifunction oven, in Genus mode (selecting the optimum combinations for the best possible cooking results)

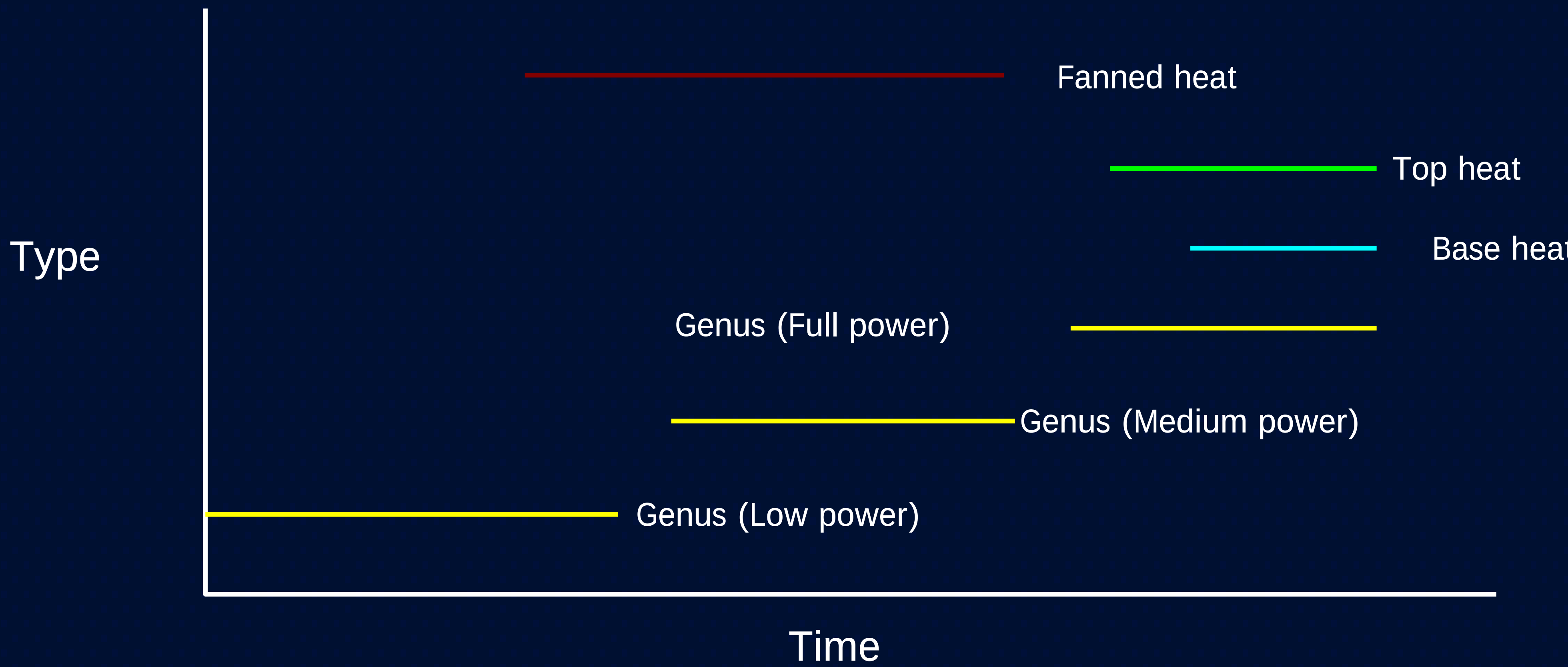
"Genus" wave

The most advanced domestic oven in the World

THE TECHNOLOGY -

- This is an example of how we have programmed Genus to product superb cooking results





Algorithms

GENUS Function	Default Time (Hours)	Default Temperature	Maximum Conventional Time (Hours)	Maximum Genus Time (Hours)	Time Division Ratio	Short Warm up Time Correction	Long Warm up Time Correction	Fast Warm	Elements (Any PWM over a 2 minute duty cycle) but still under thermostatic control				Microwave Power
									Convection	Grill Inner	Grill Outer	Base	
1	1.00	200	4.00	4.00	T/3	OFF	ON	OFF	Thermostatic	PWM 50%			High
2	0.40	250 225	4.00	4.00	T/3	ON	OFF	OFF	Thermostatic	0 - 29 mins Thermostatic 30+ mins 50%	Thermostatic	Thermostatic	High for 4.5mins then Medium
3	1.00	170	4.00	4.00	*0 - 45 mins T/3 *46 - 75 mins T/2.5 *76+ mins T/2.5	ON	OFF	OFF	Thermostatic	Thermostatic On for first 2 mins then on between 8 and 10 mins	Thermostatic On for first 3.5 mins	Thermostatic for first 3 mins then off	Medium last 3 minutes of cooking time Medium last 4 minutes of cooking time Medium last 3 minutes of cooking time
4	0.40	>=*35mins 190 <*35mins 170	4.00	4.00	T/3	ON	OFF	OFF	Thermostatic				Low and then Medium for last 3 minutes
5	2.00	200	4.00	4.00	T/3	OFF	ON	OFF	Thermostatic	PWM 30%			High
6	2.00	180	4.00	4.00	T/3	ON	OFF	OFF	Thermostatic				High 2.5mins then Low
7	0.45	200	4.00	4.00	T/3	OFF	ON	OFF	Thermostatic	Thermostatic			High
8	0.30	150	4.00	4.00	T/3	ON	OFF	ON	Thermostatic				High
Defrost	Def	40 (fixed)	-	-	-	-	-	-	Thermostatic				Low 25% Duty Cycle

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Mechanical Build

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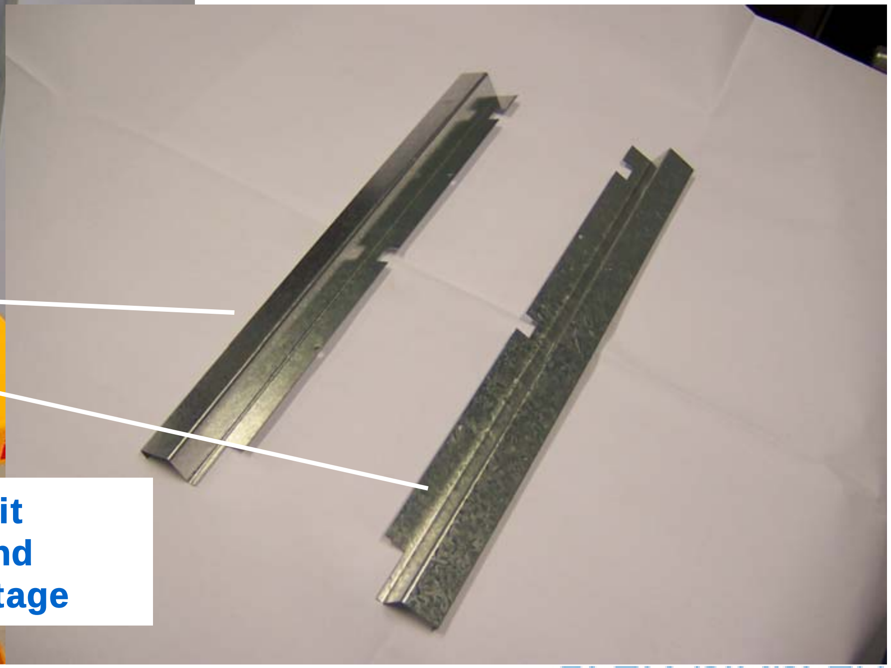
Wrap & Front Frame



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Inside Top Oven Cavity

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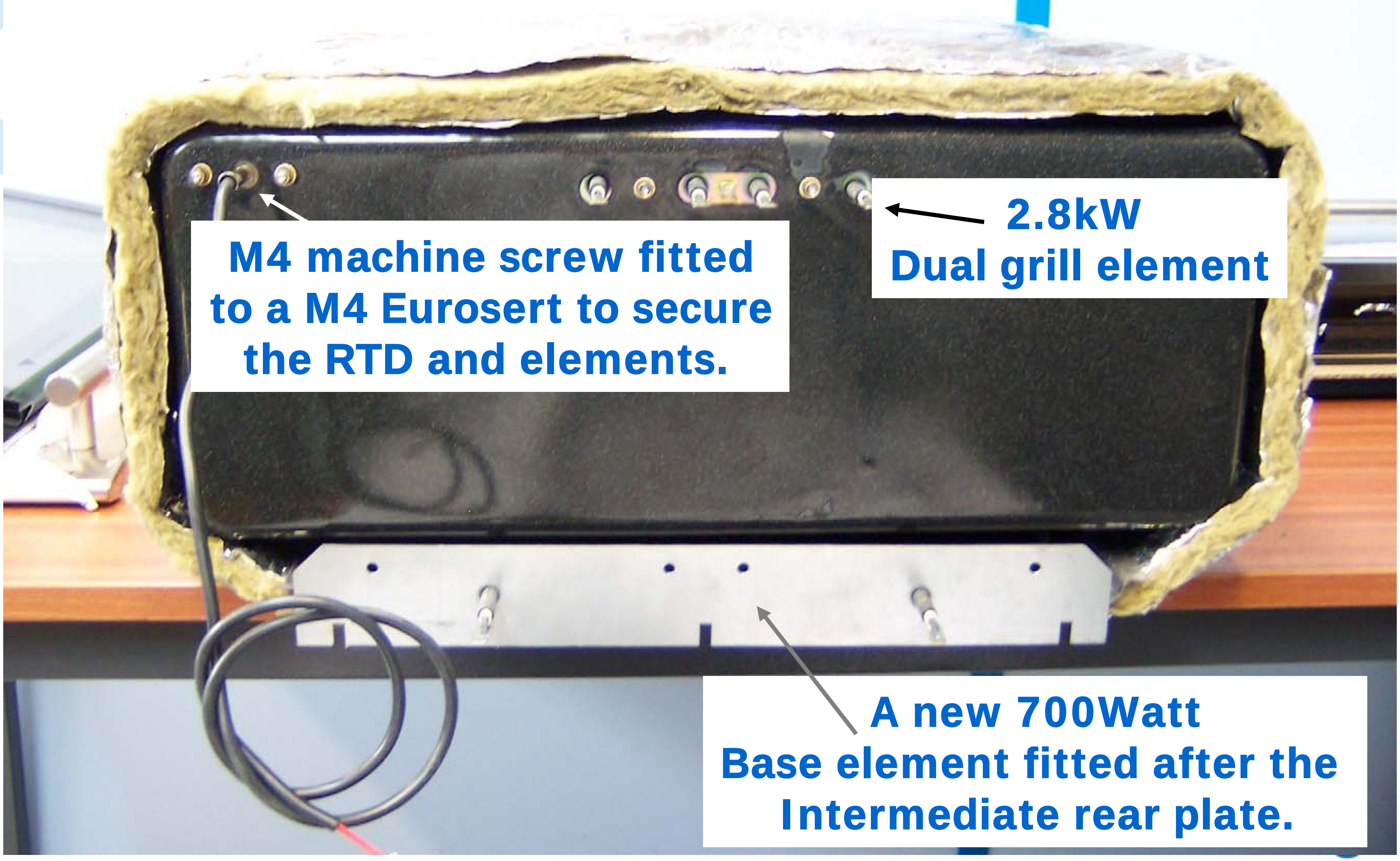
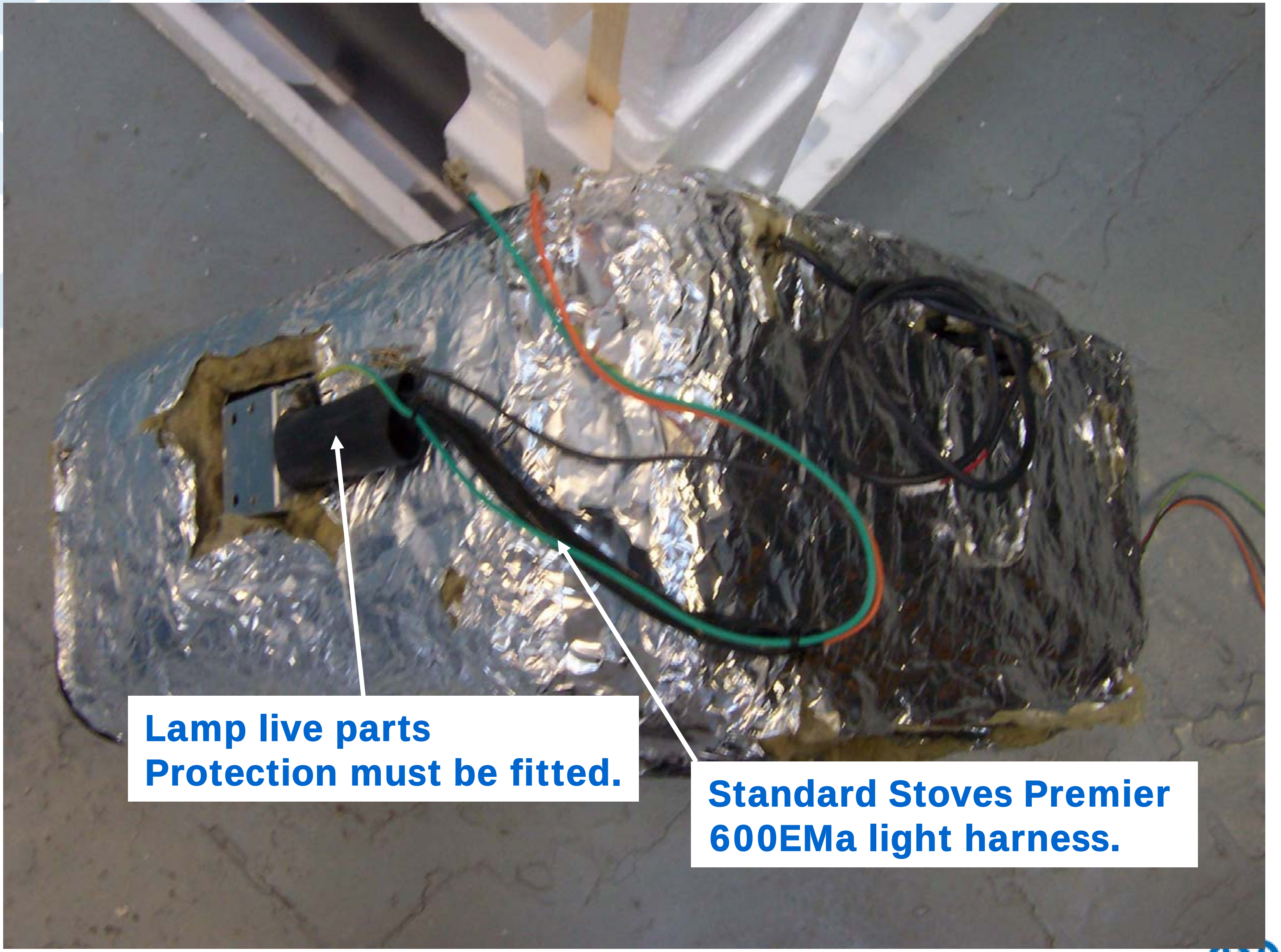
Rear Of Top Oven Cavity

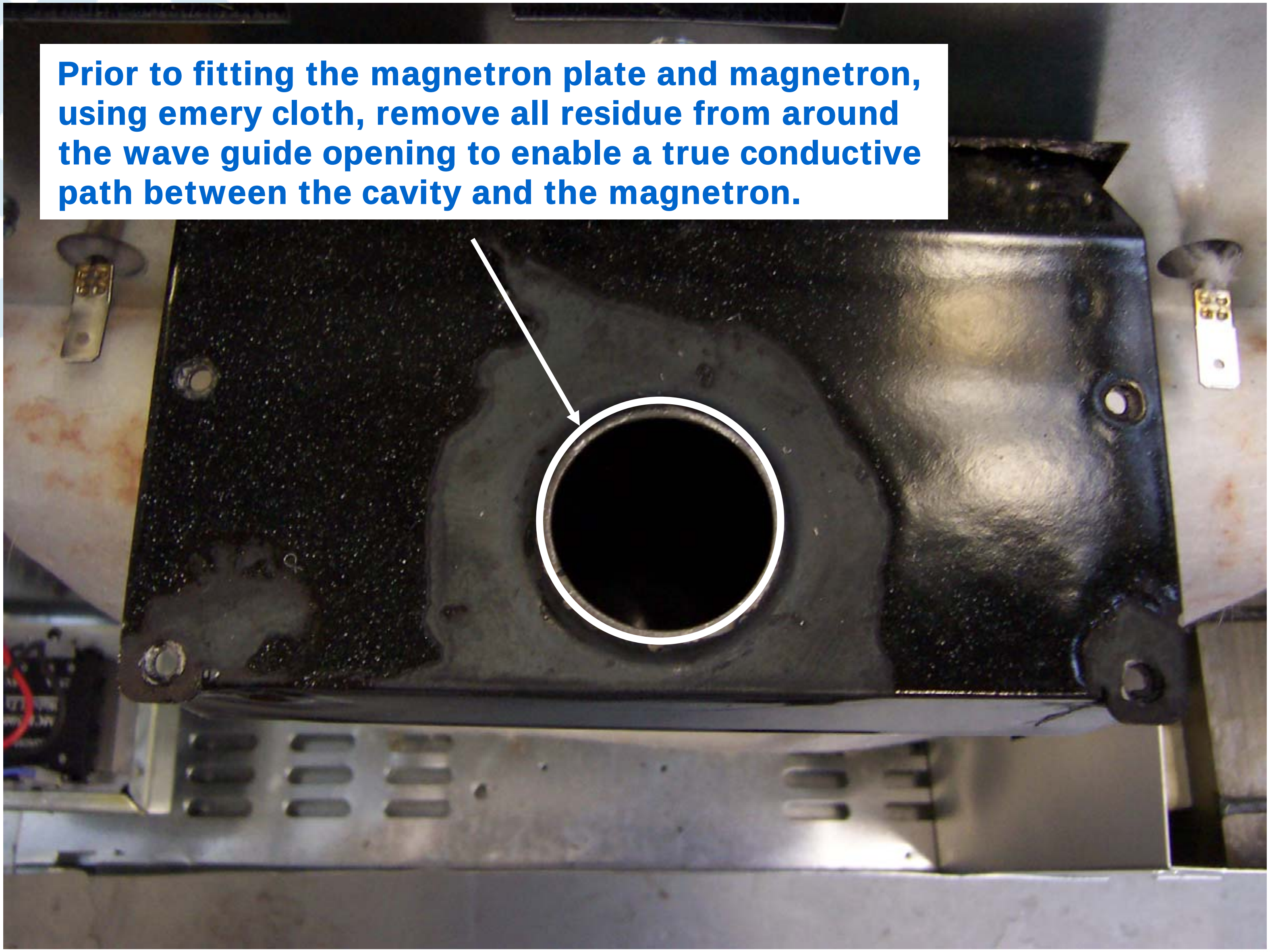
Note: No mesh washers required in this cavity



Side View Of Top Oven Cavity



Wave Guide Wipe



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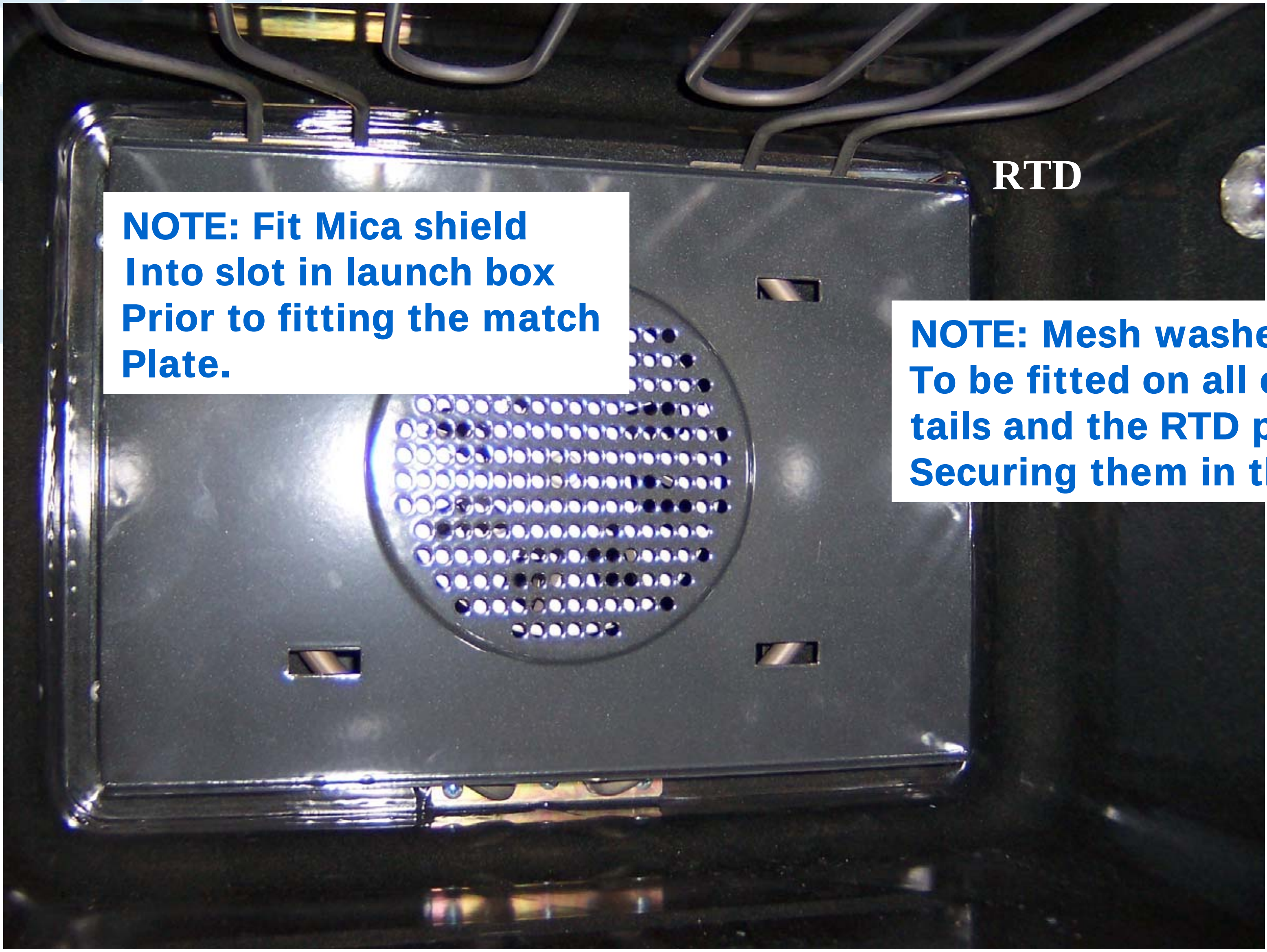
Inside Of Main Oven Cavity



NOTE: Fit Mica shield Into slot in launch box Prior to fitting the match Plate.

NOTE: Mesh washers To be fitted on all element tails and the RTD prior to Securing them in the cavity.

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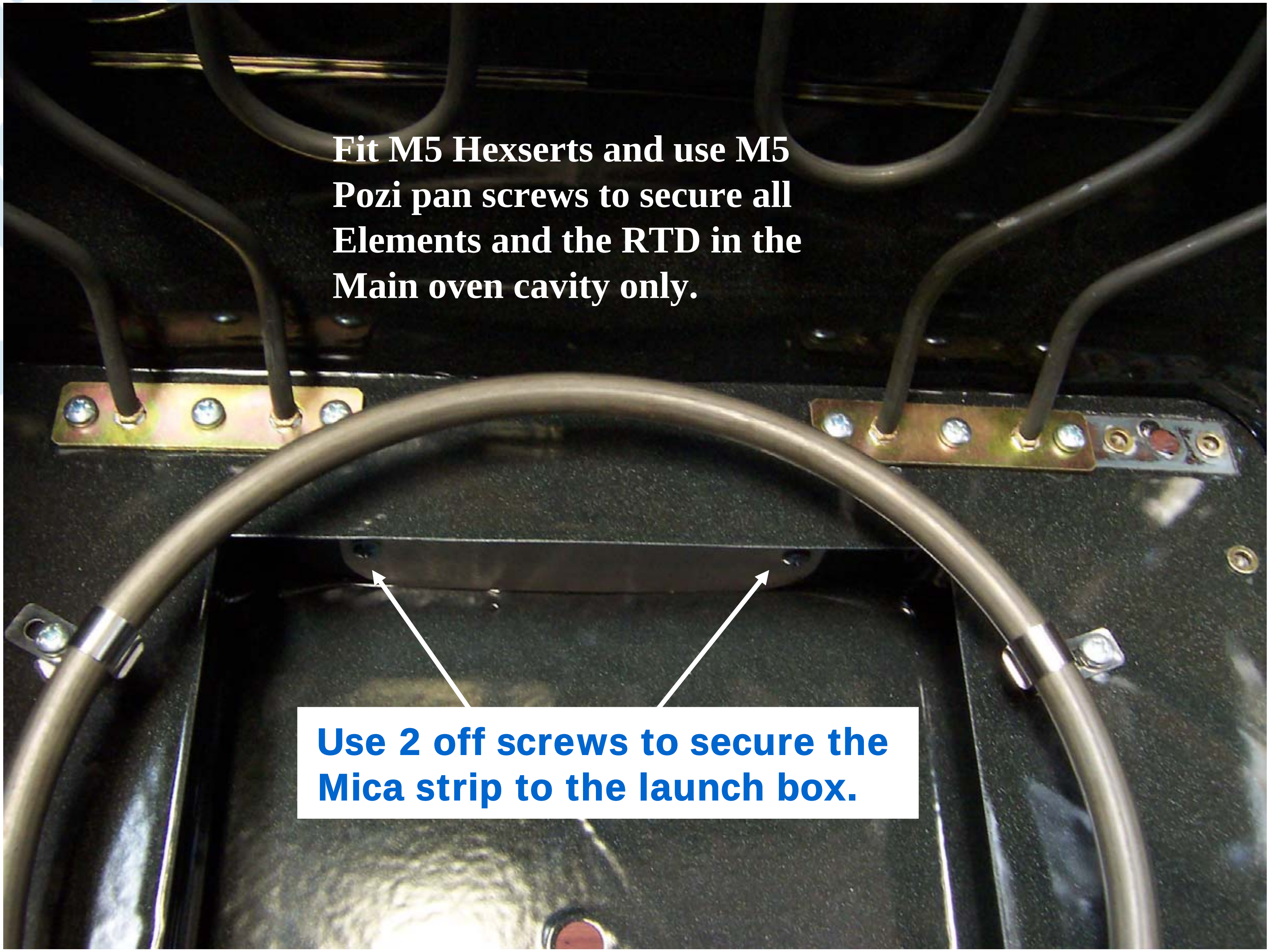
Mica Fitting



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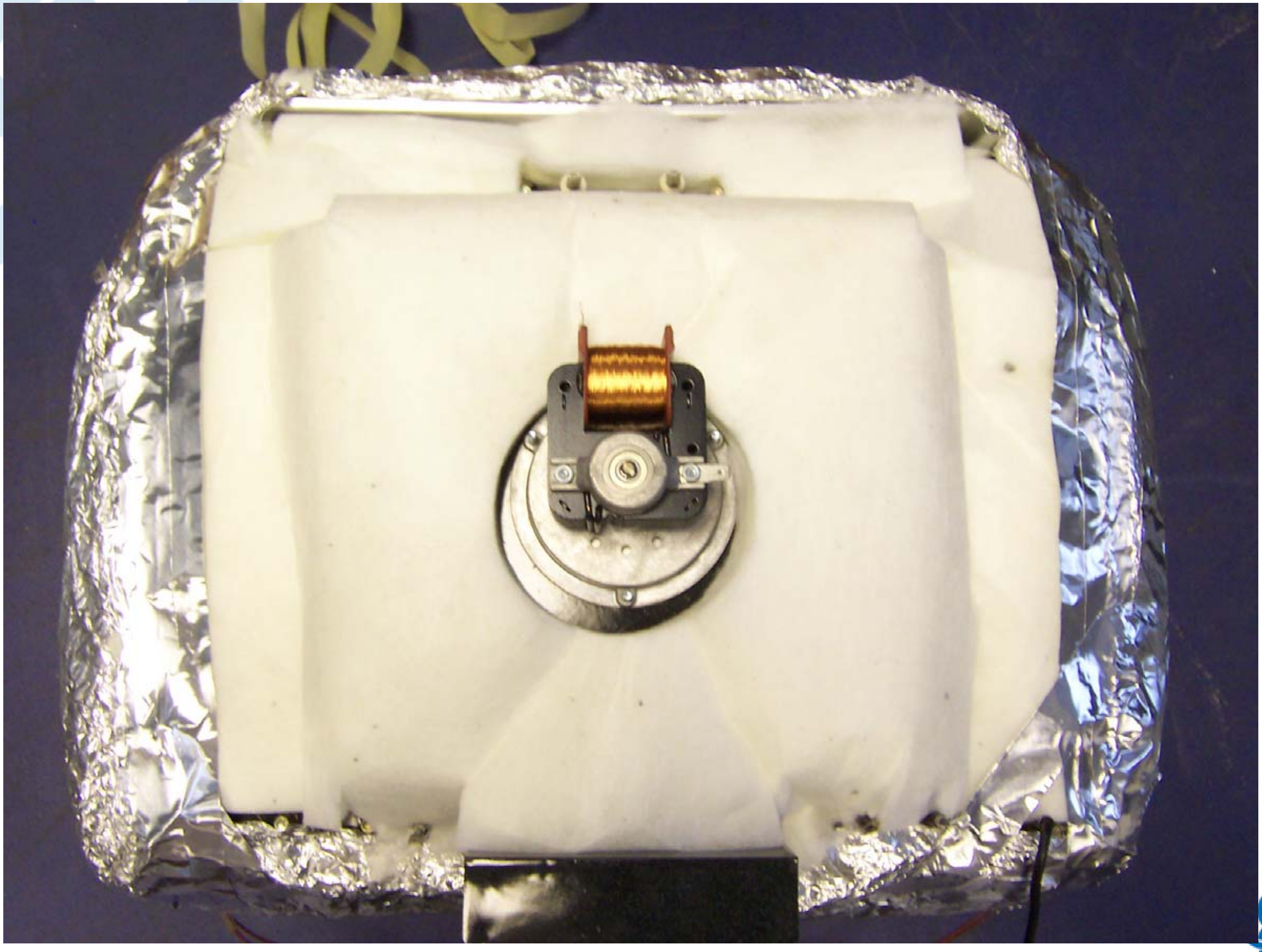
Main Oven Rear Insulation



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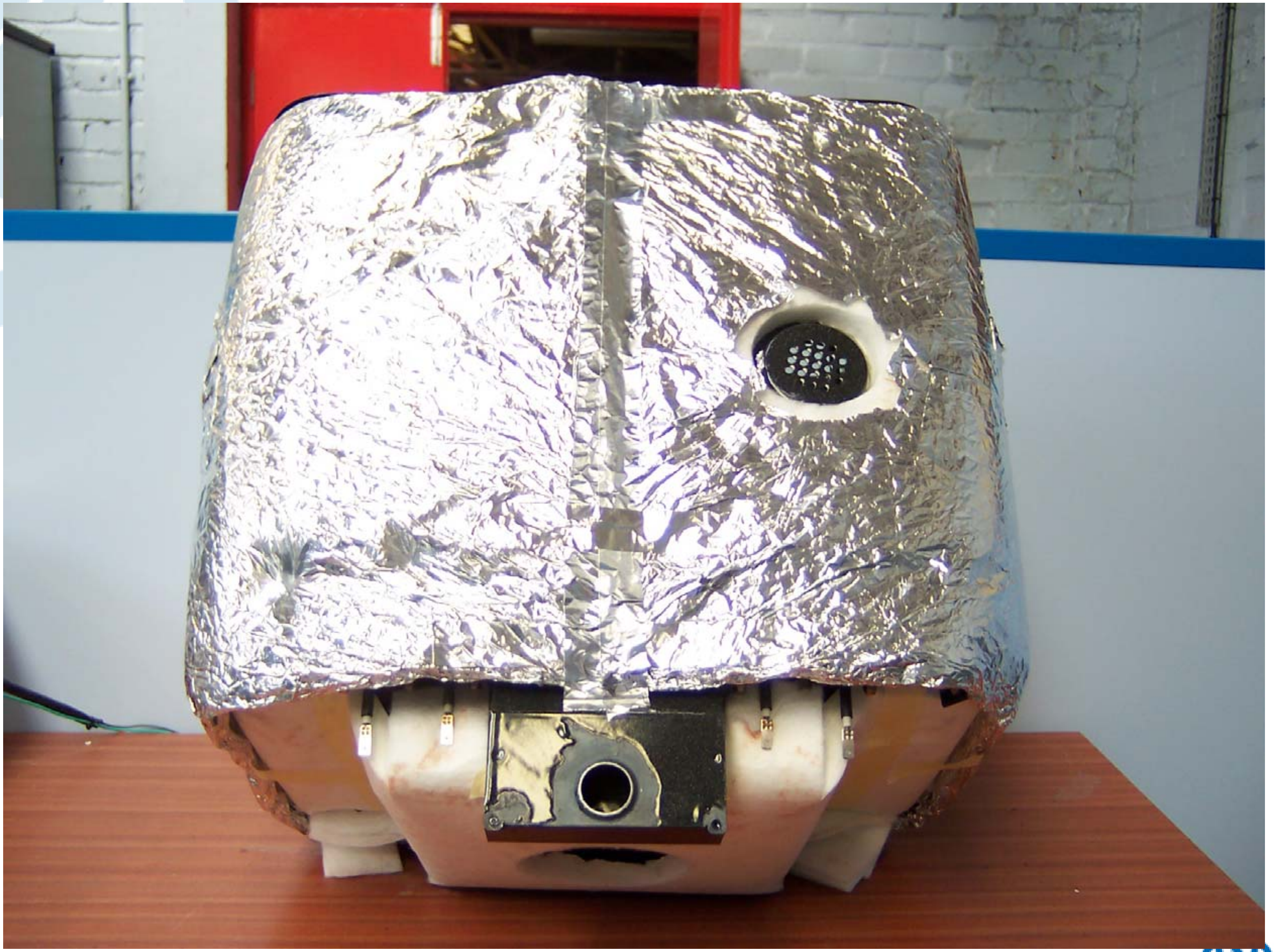
Main Oven Wrap



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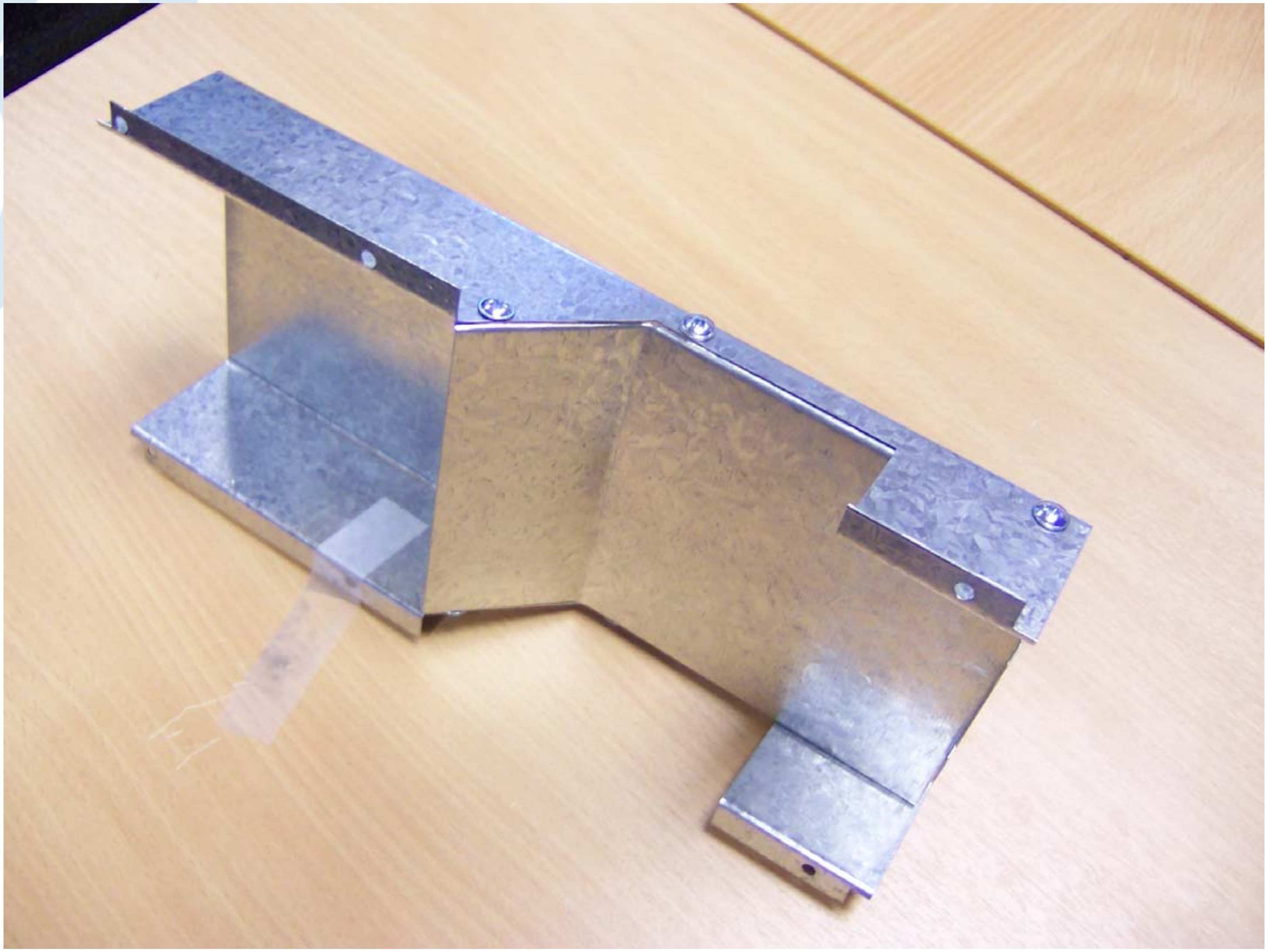
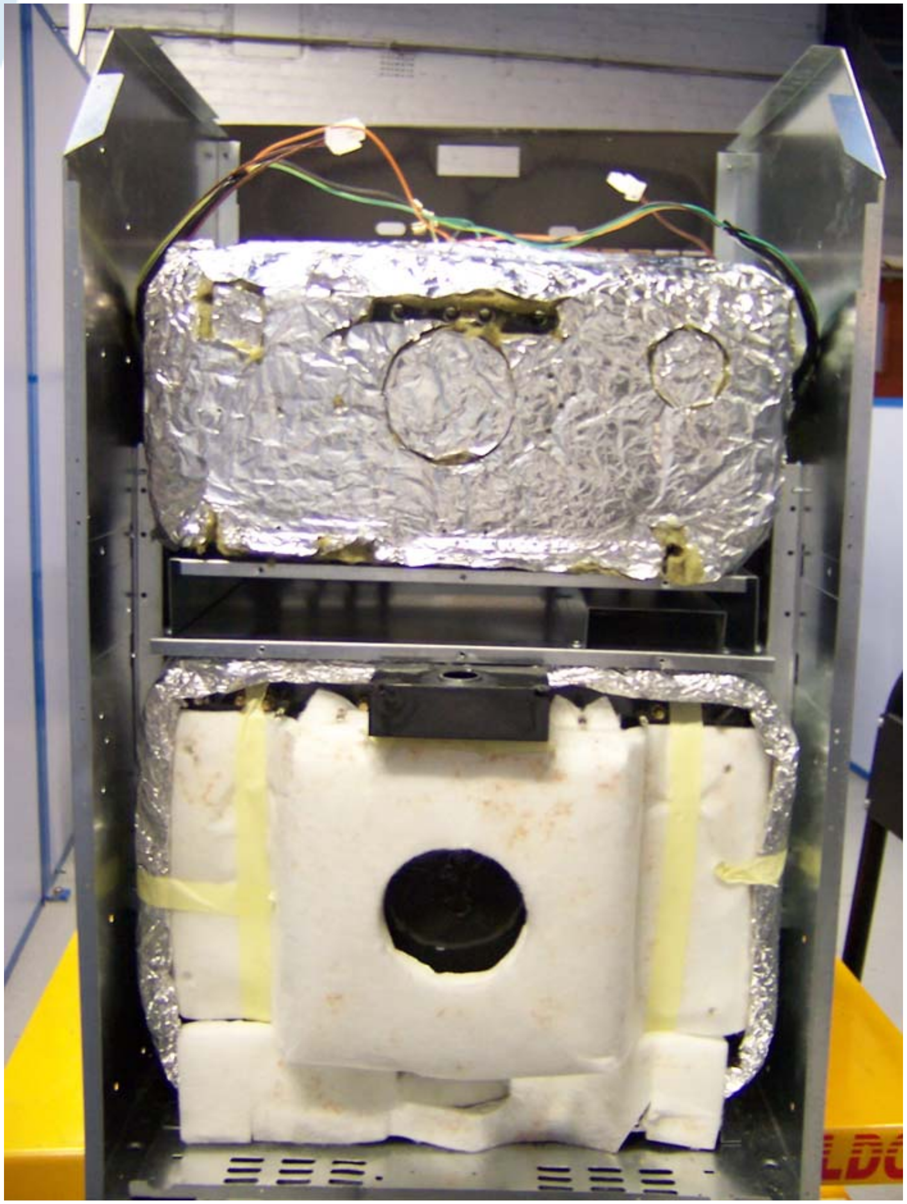
Centre Vent Duct



Centre Duct Front View

Cavities and Centre Duct



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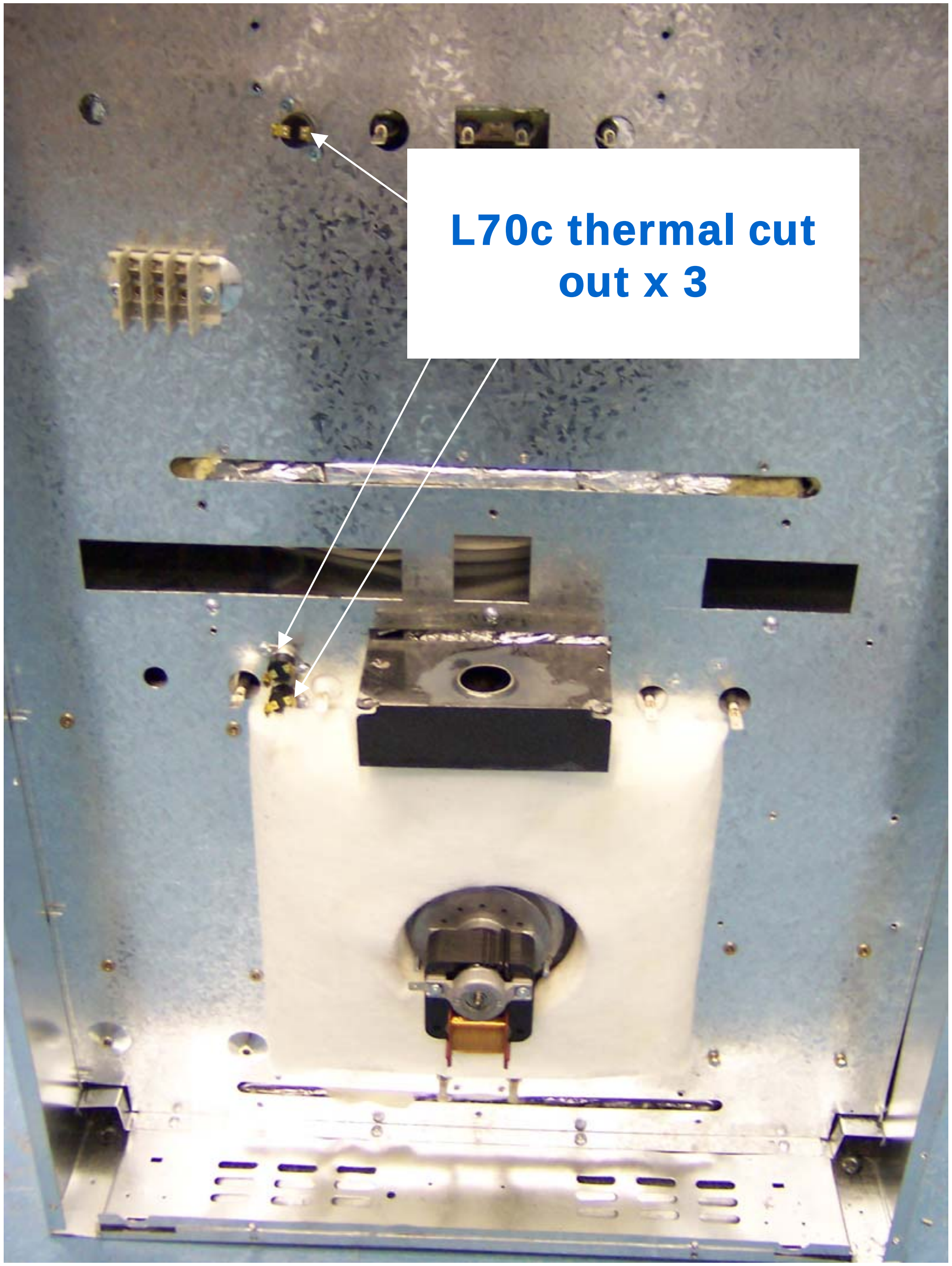
Intermediate Rear Fitting



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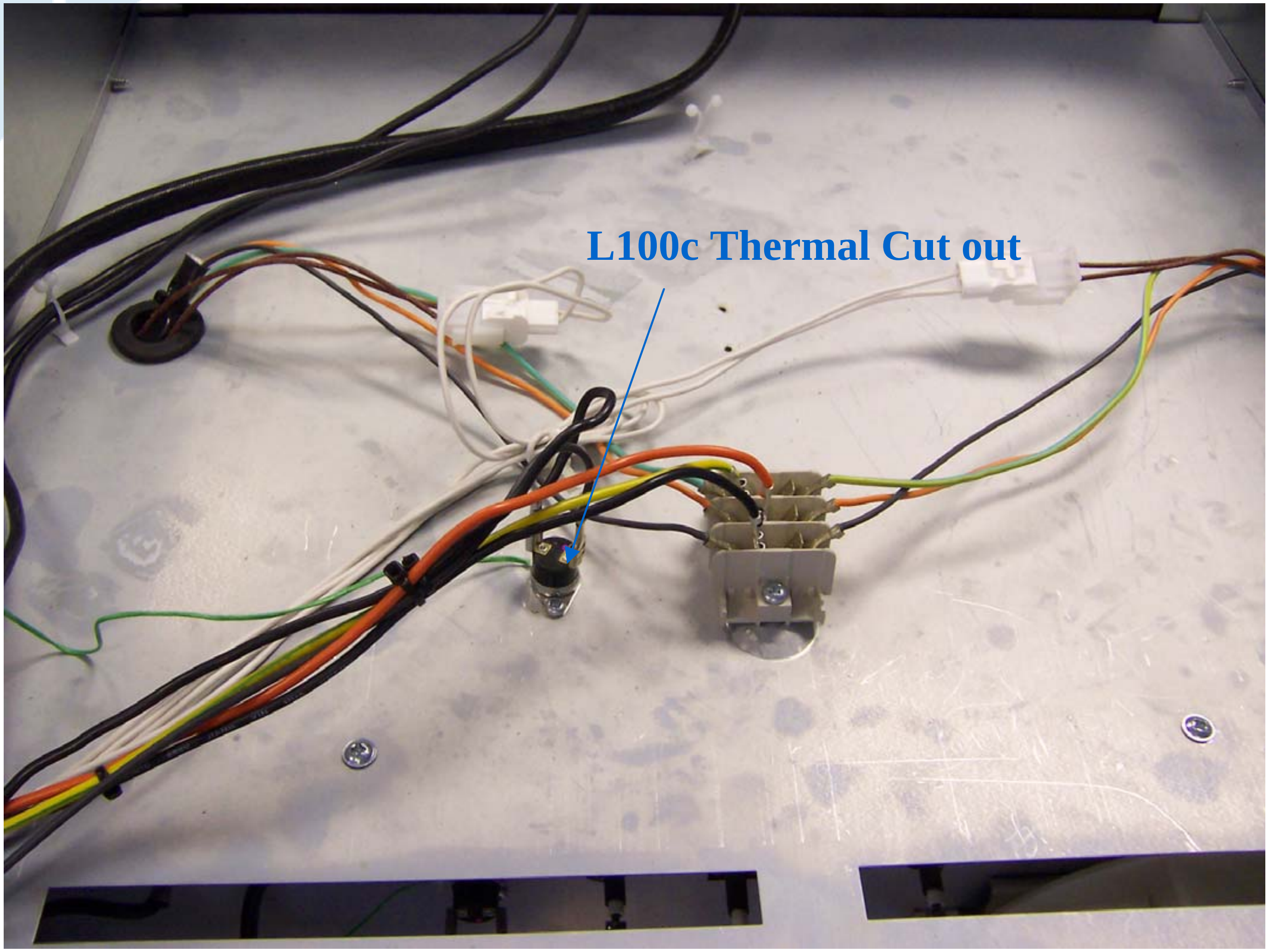
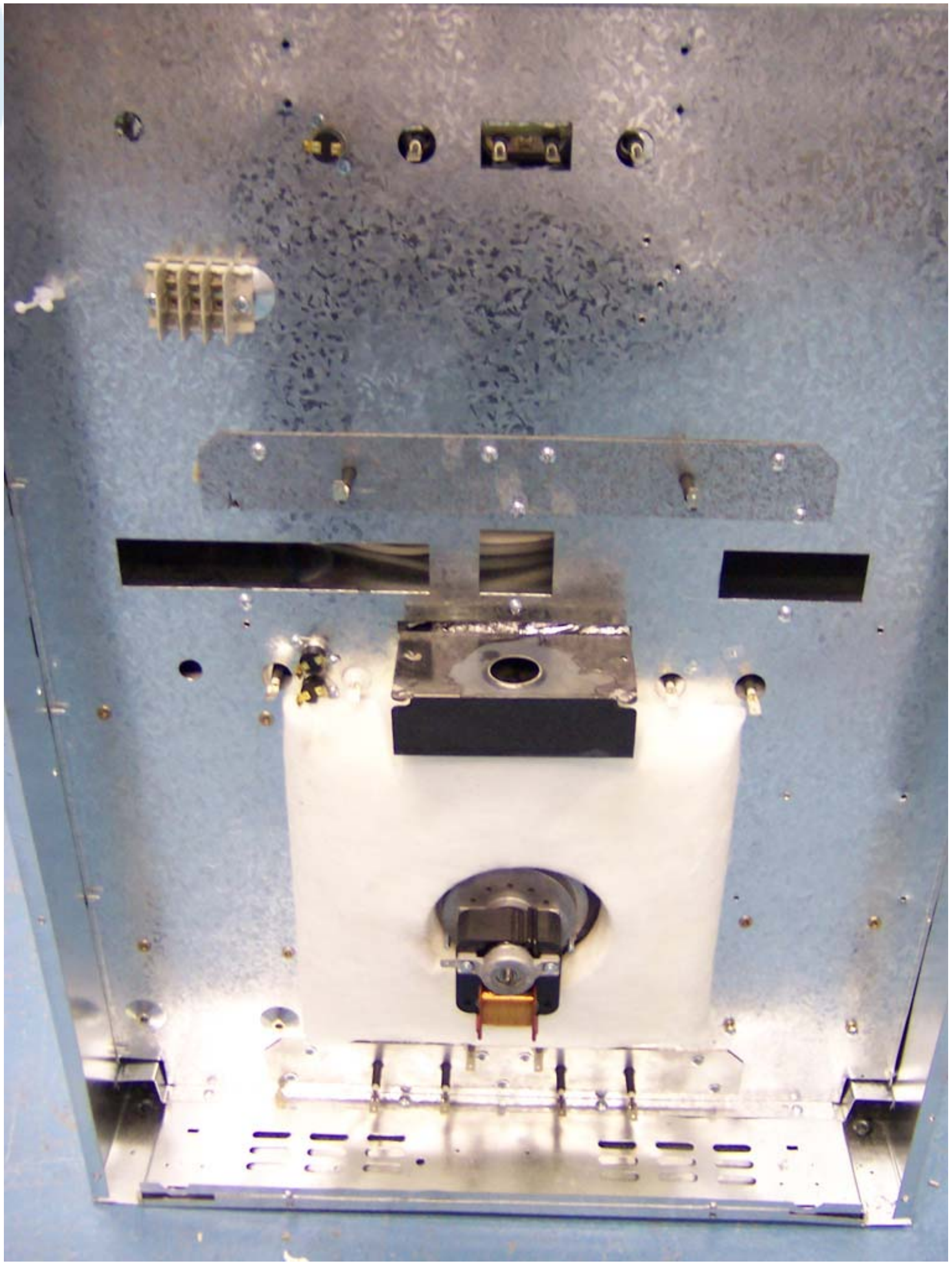
Intermediate Top Fitting



Top & Main Oven Base Elements



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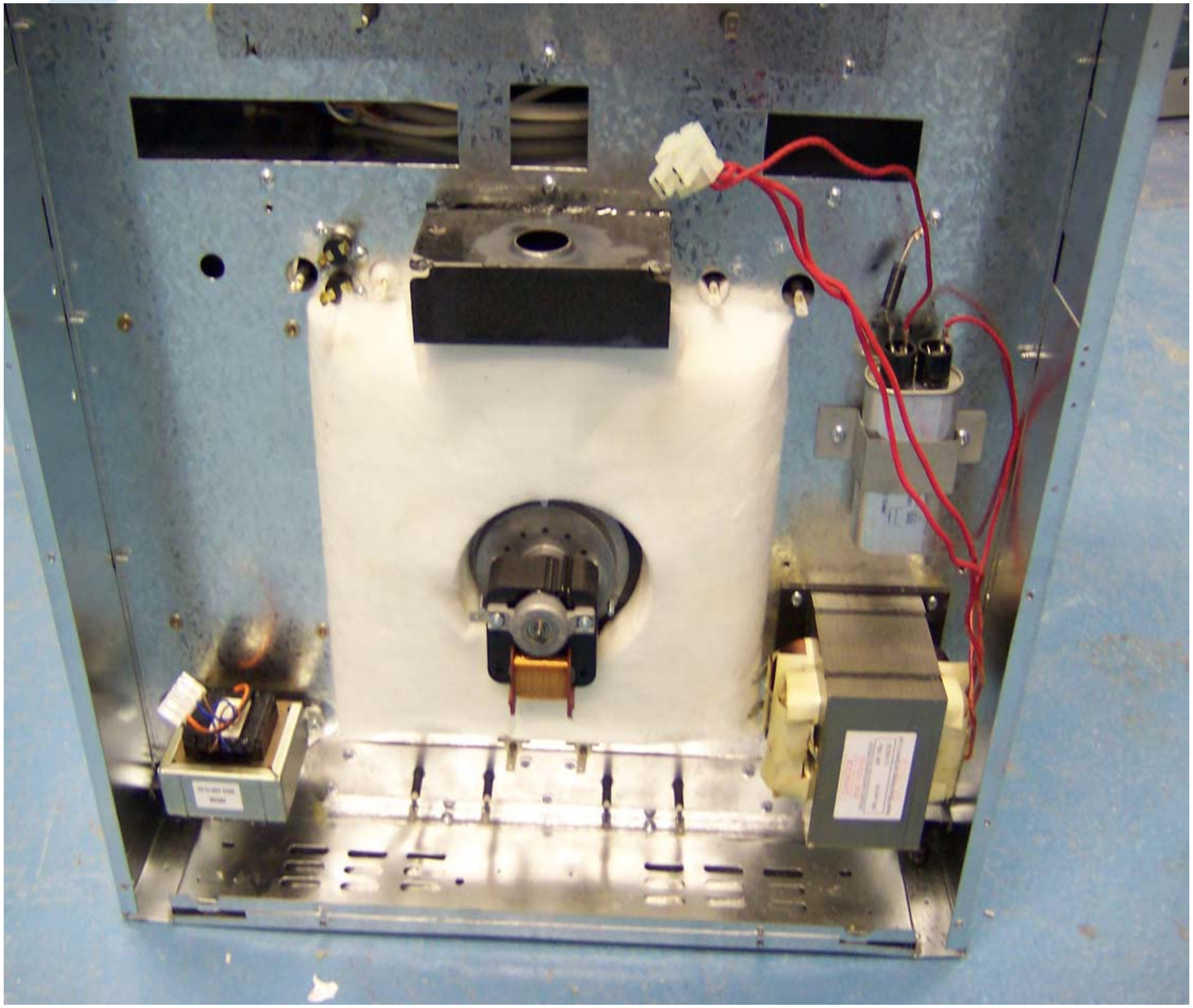
Microwave Transformer Capacitor & Diode



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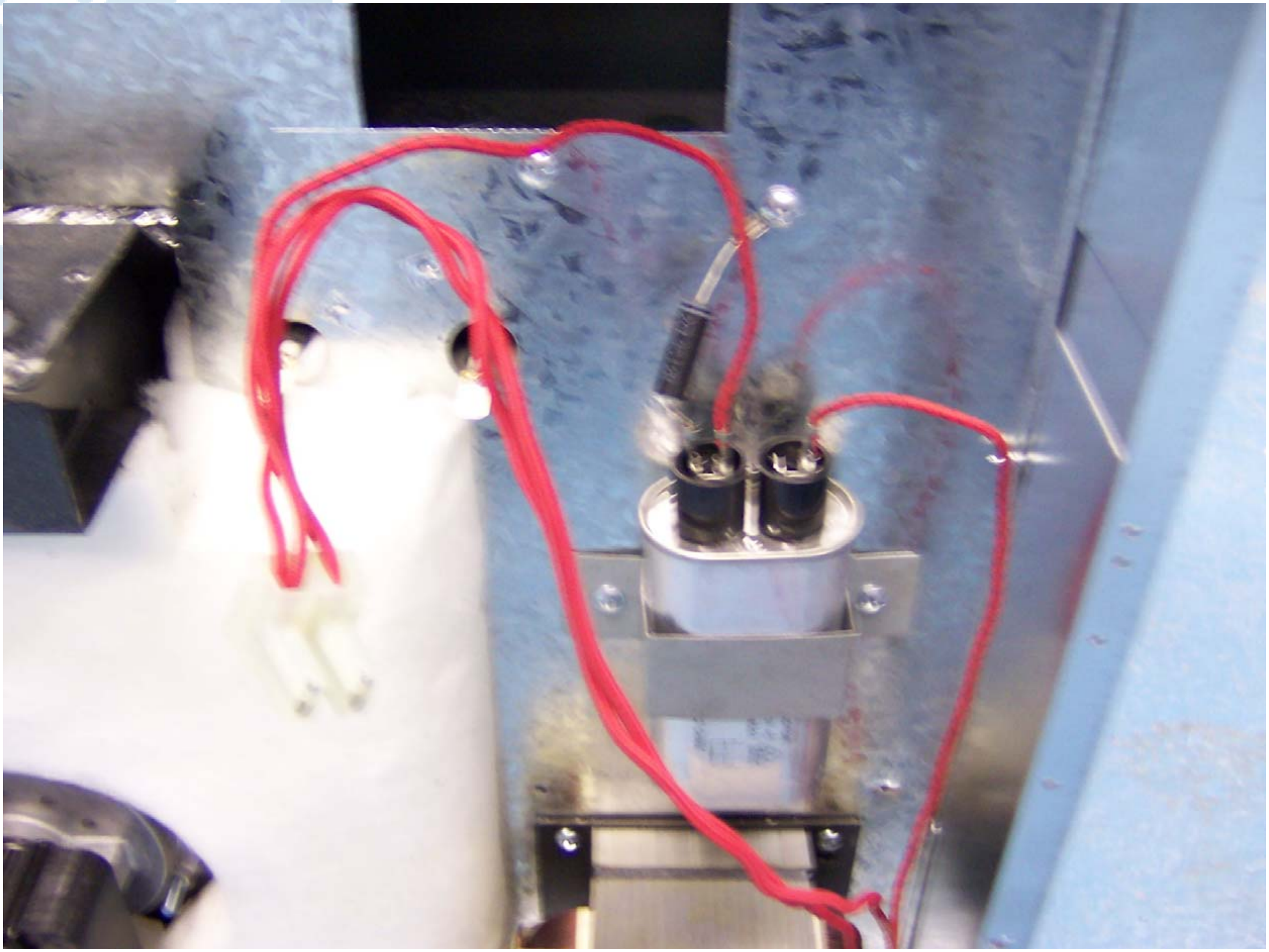
Microwave Transformer Cap & Diode Wire Connections



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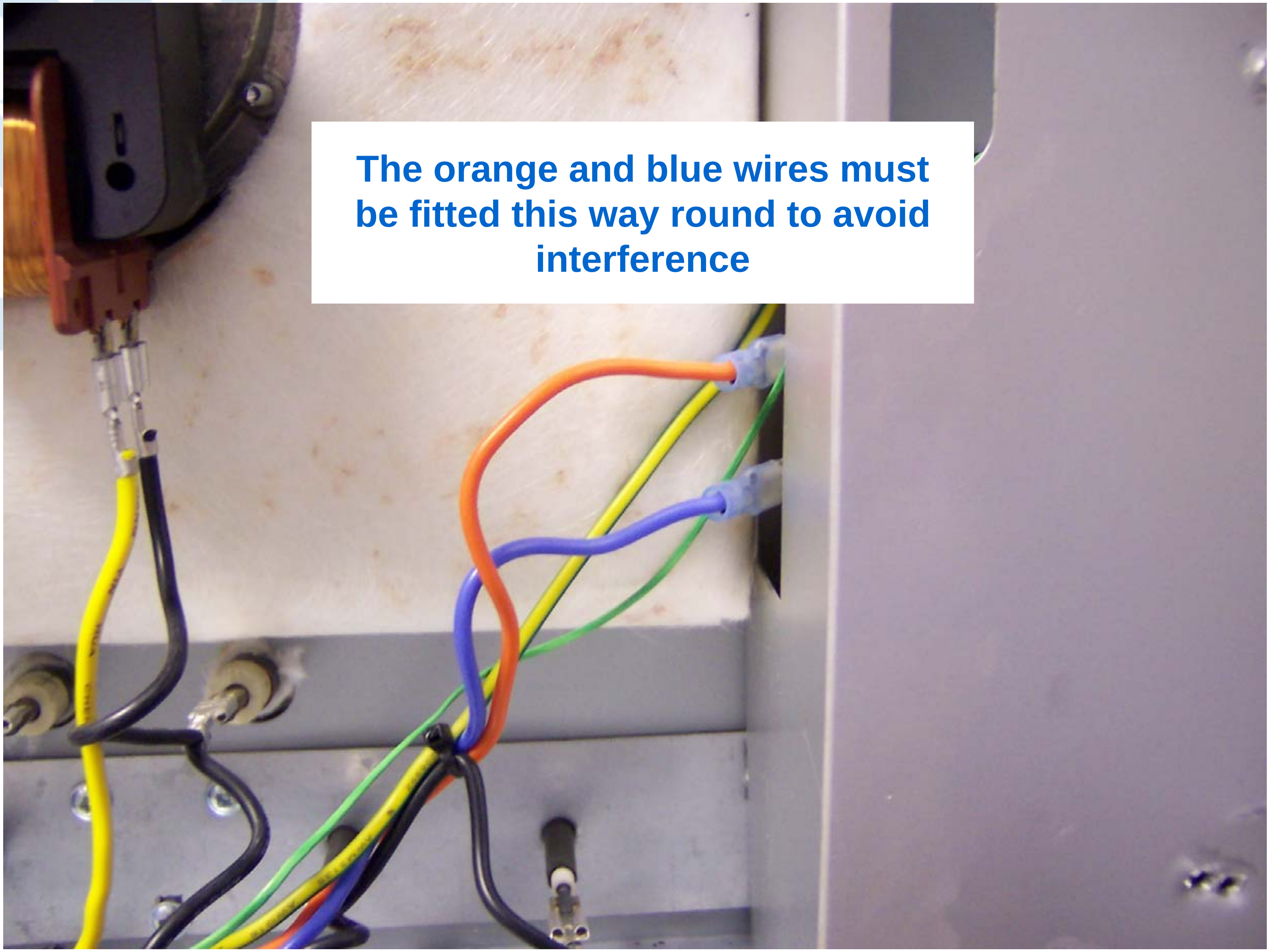
Transformer Enclosure



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Main Oven RTD

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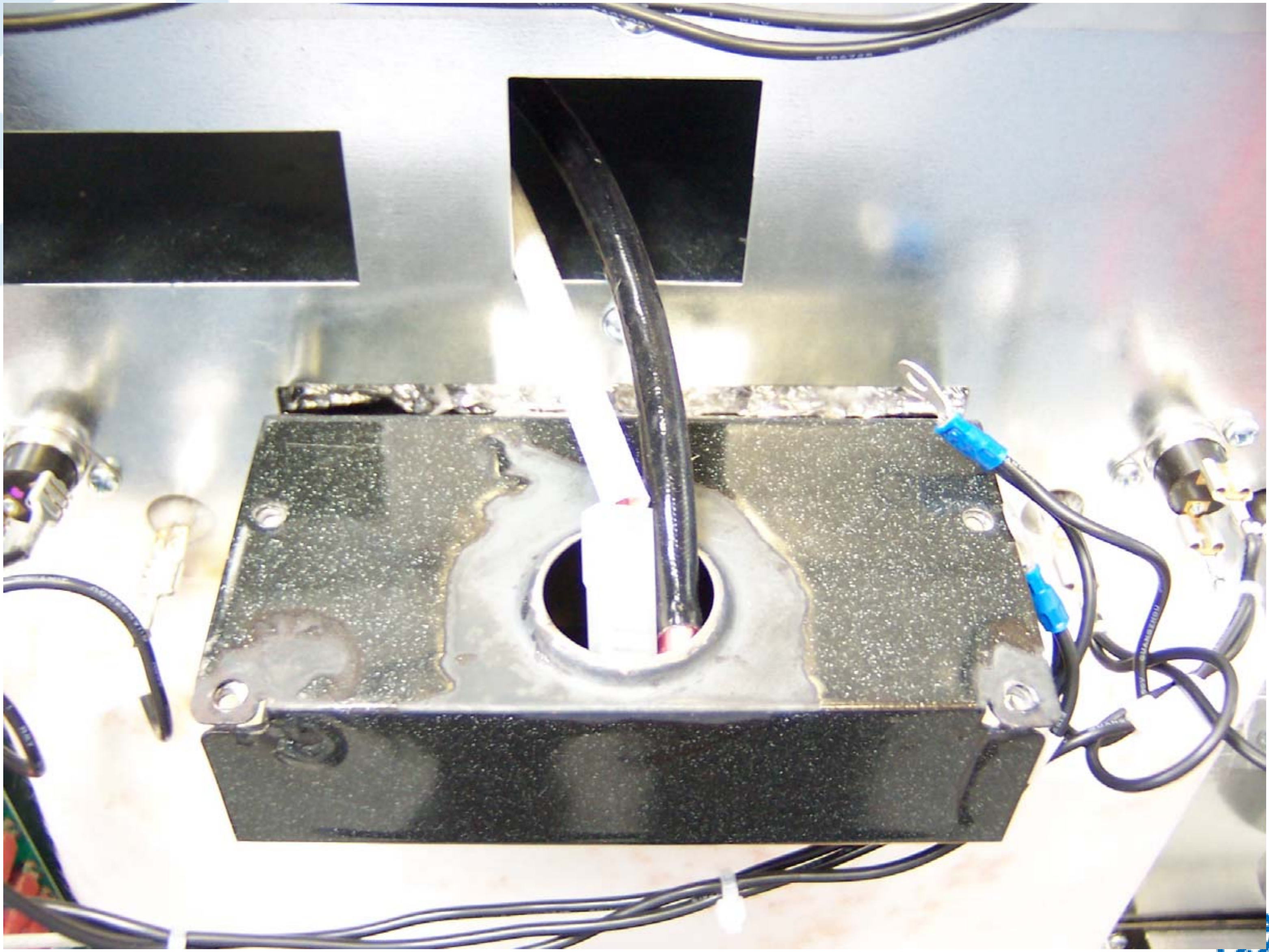
Magnetron Thermal Cut out Wiring



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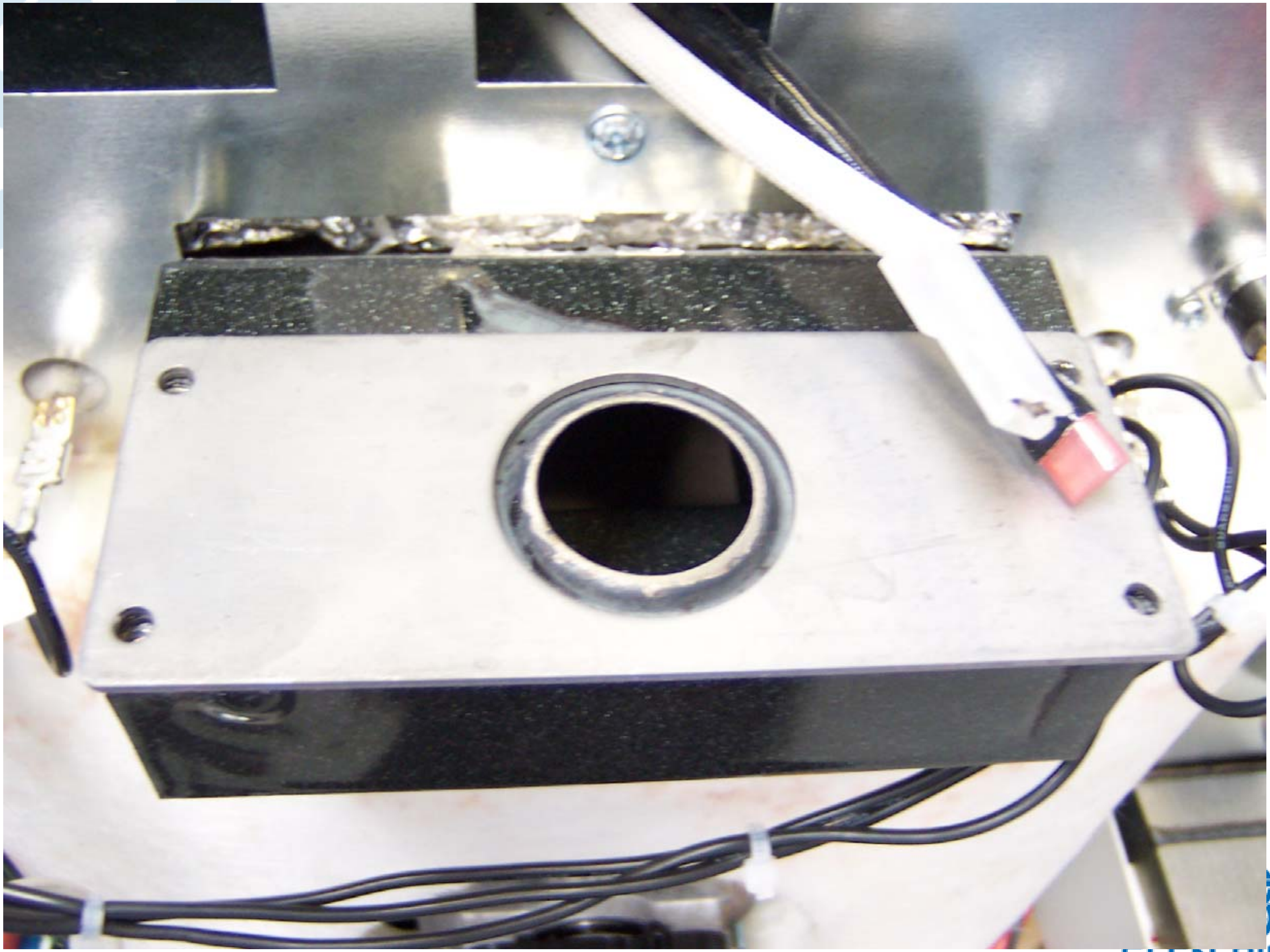
Magnetron Spacer



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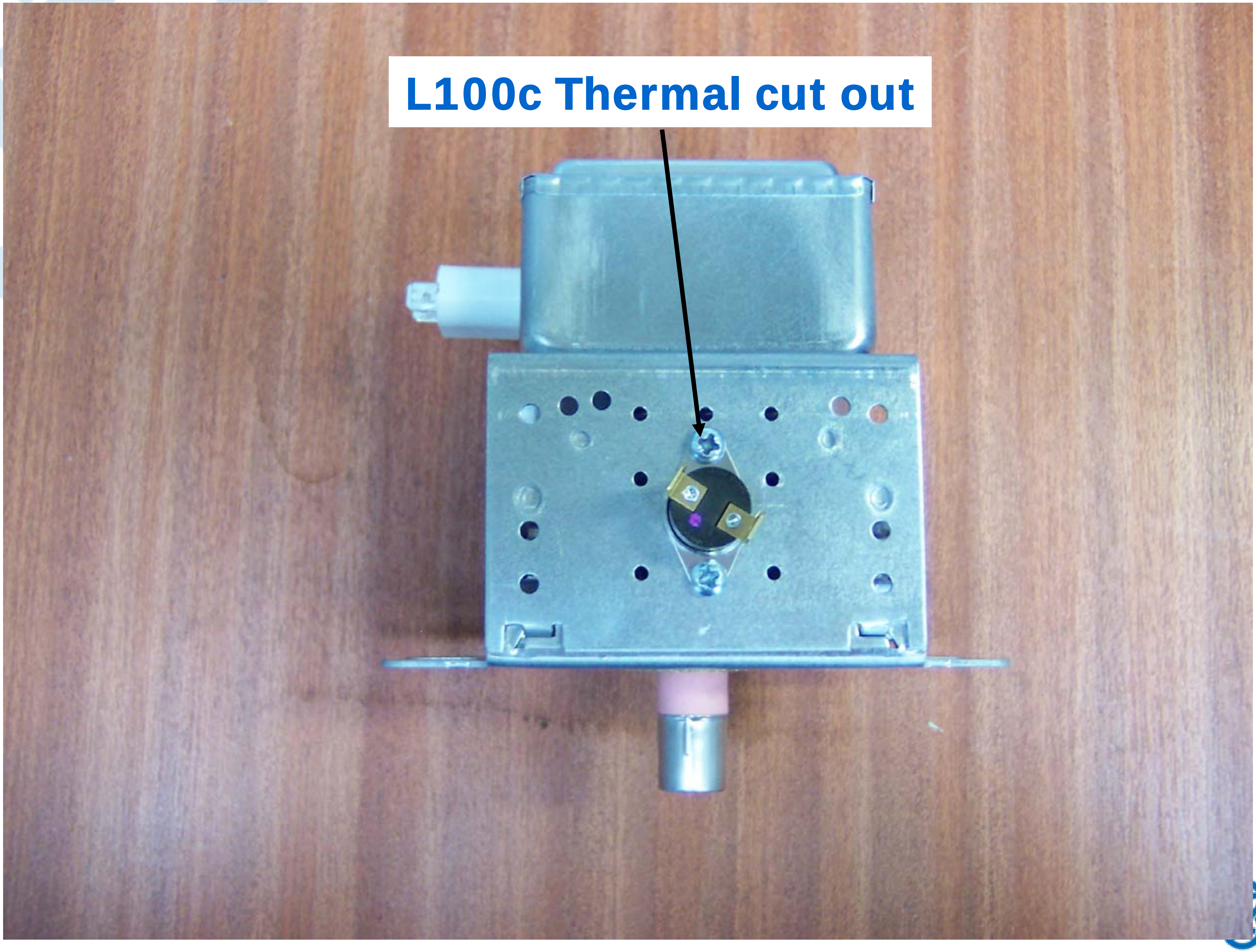
Magnetron Thermal Cut Out Position



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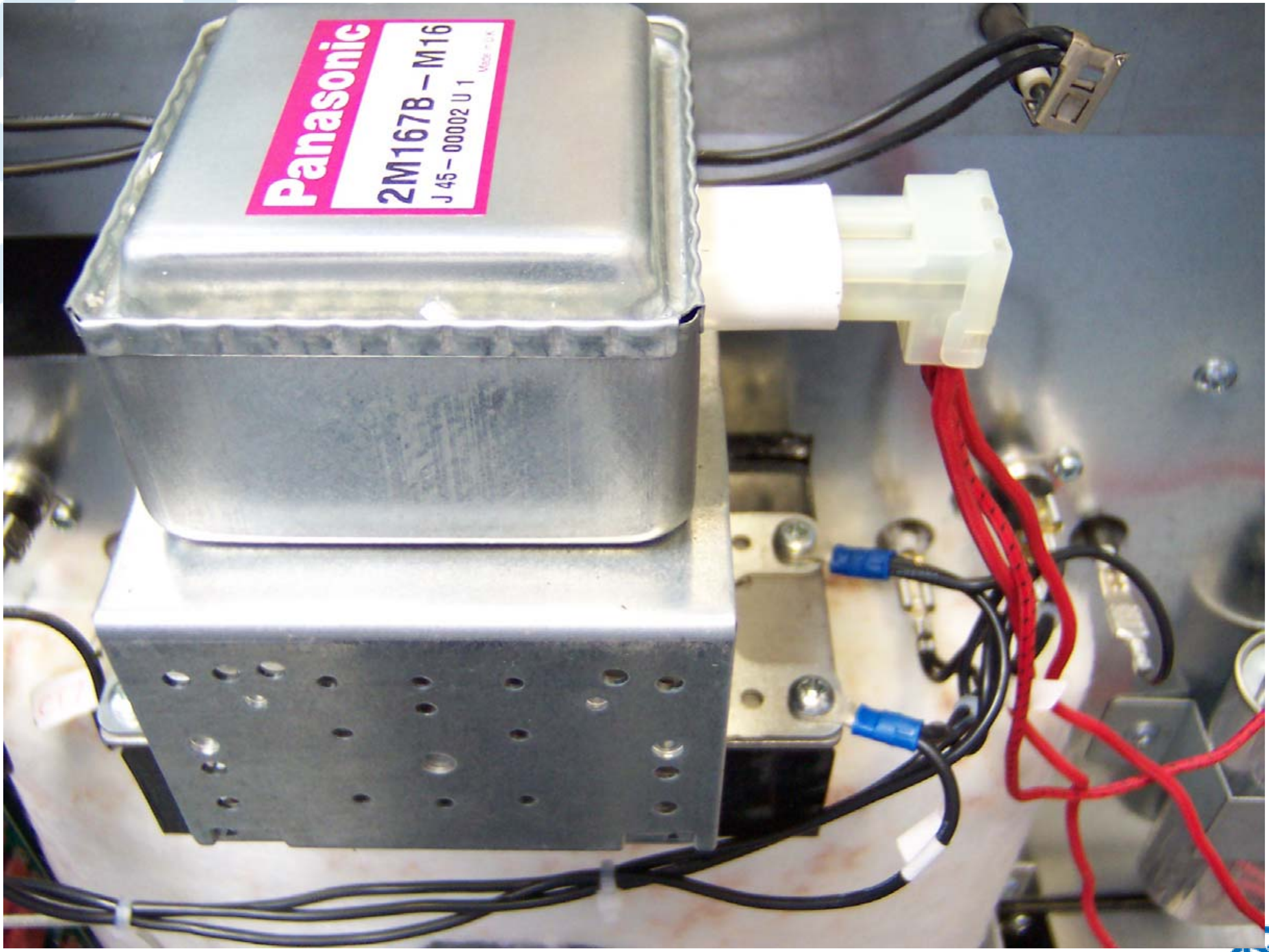
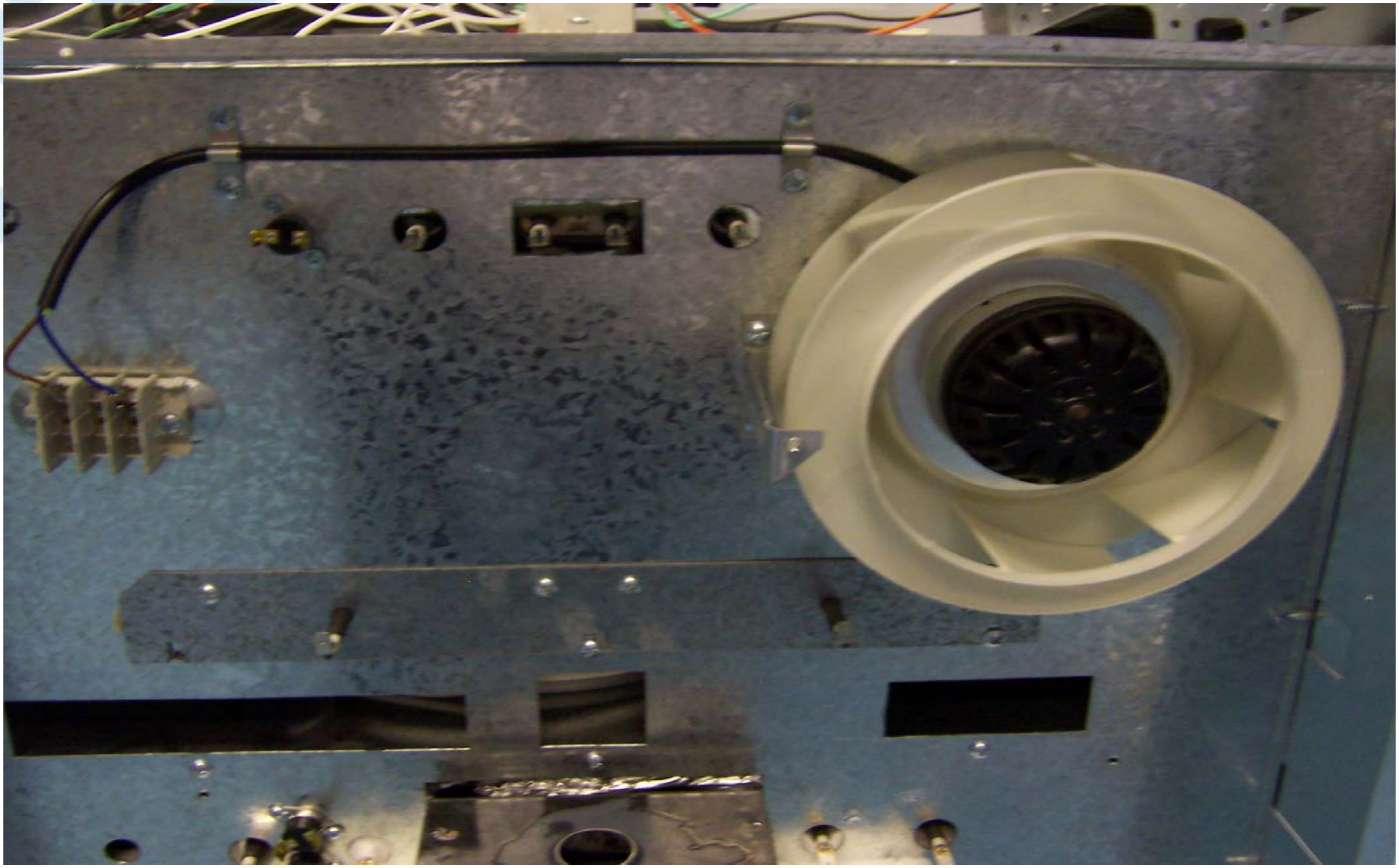
Assembly Of Magnetron



Assembly of Bracket & Cooling Fan



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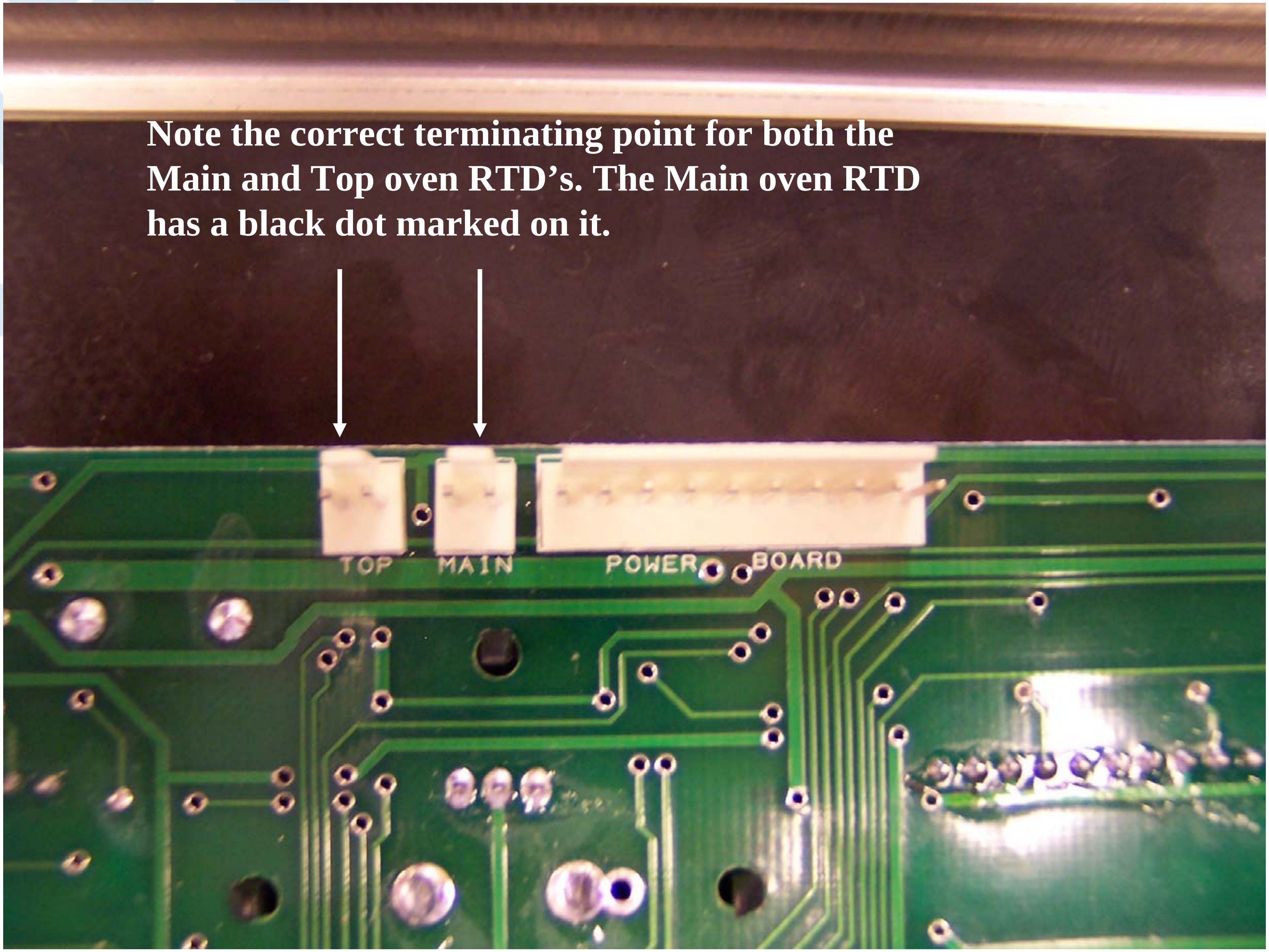
Connection to the Interface



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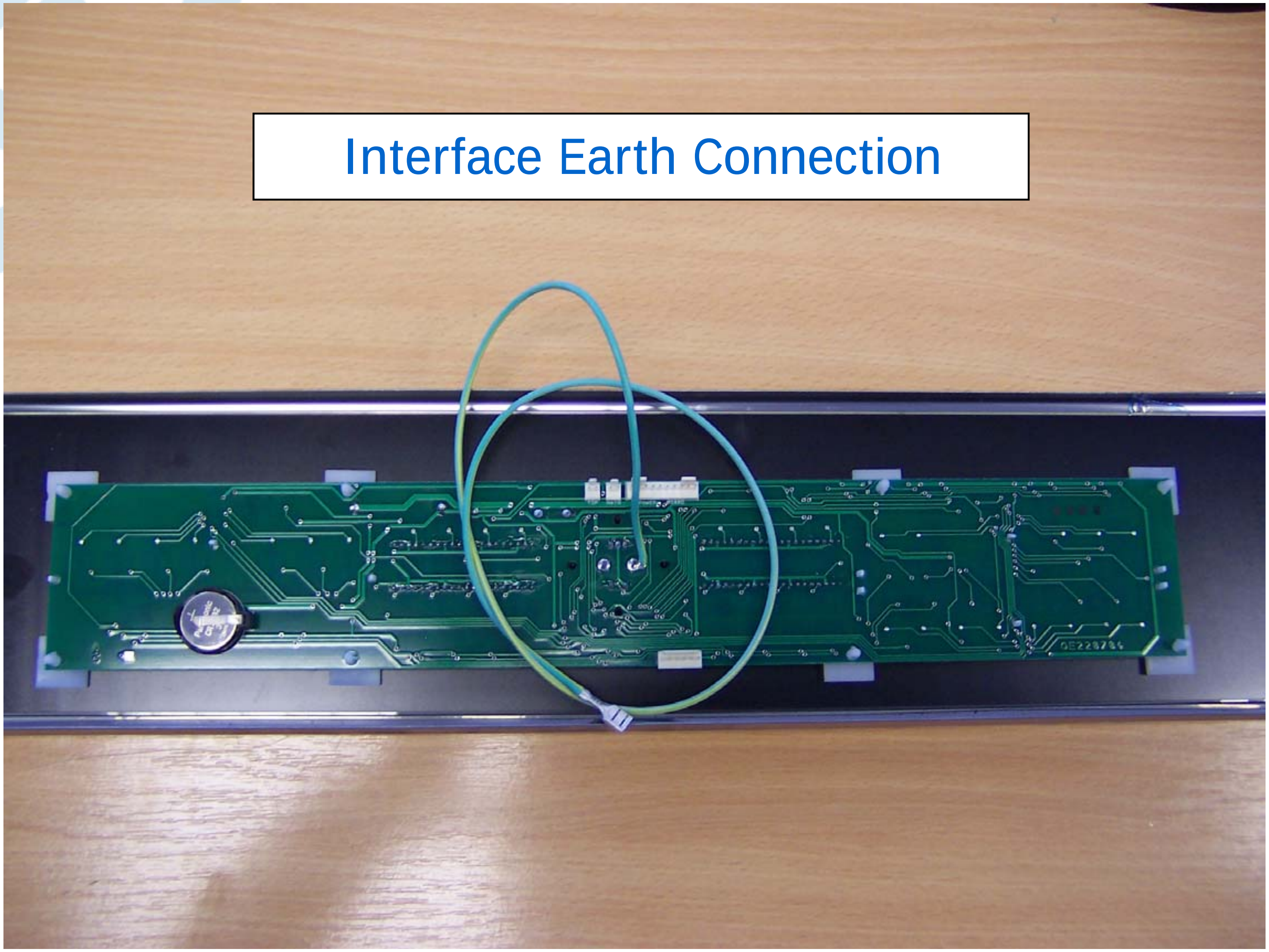
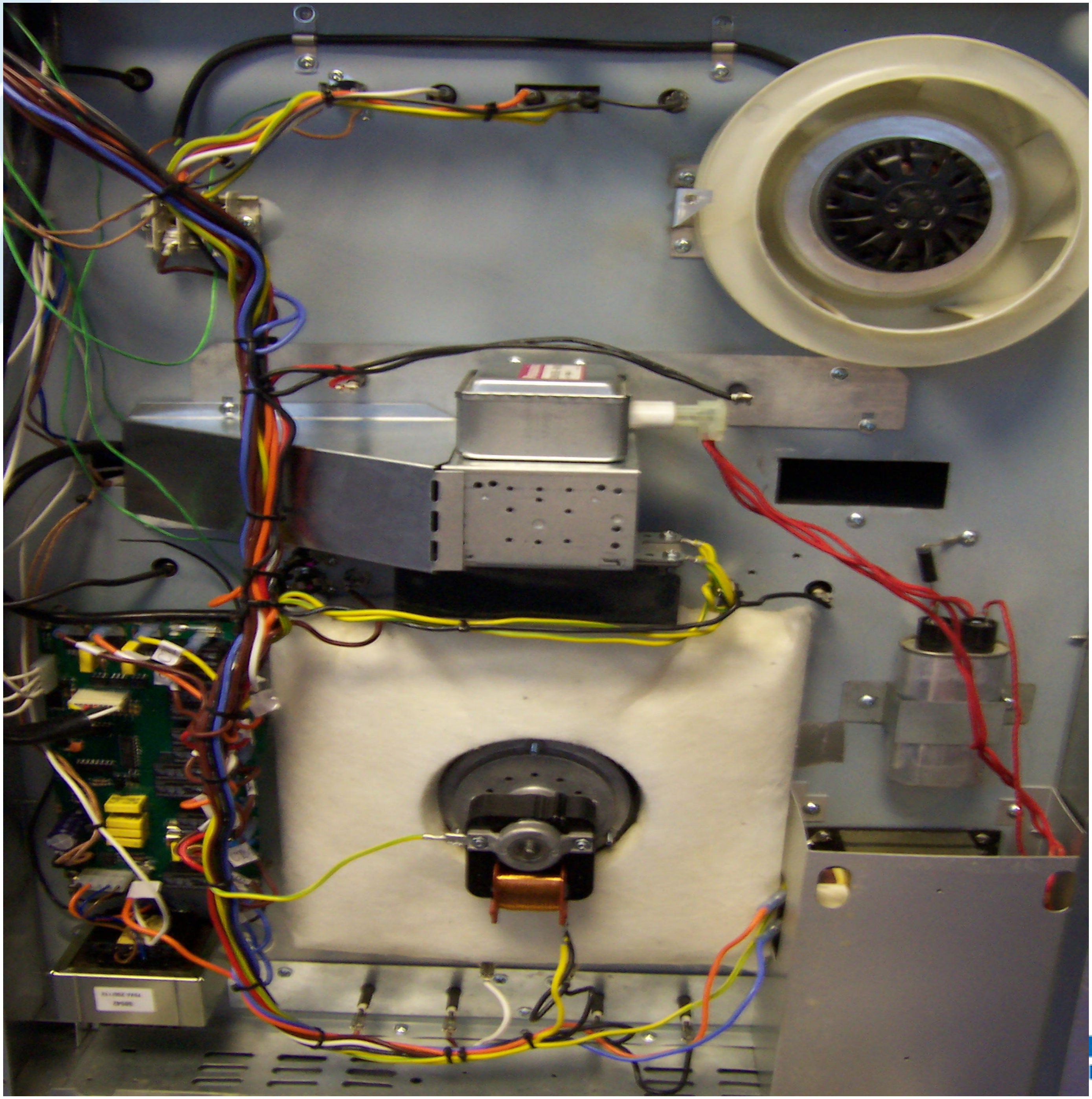

Interface Earth Connection

General Rear View



Troubleshooting

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Troubleshooting

- SAFETY FIRST
- Ensure the appliance is switched off
- Whenever you remove the rear of the appliance **ALWAYS DISCHARGE THE HIGH VOLTAGE CAPACITOR**

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HOME APPLIANCES

Troubleshooting

- **SAFETY FIRST-BE SAFE NOT SORRY**
- Use the available wiring and circuit diagrams.
- Work in a logical and methodical manner.
- If required use special function G3
- Example flowchart 1 – No Display on Fascia
- Example flowchart 2 – Poor Cooking Performance

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Discharging Capacitor

- Ensure appliance is switched off at the mains.
- Using discharge lead place the earth probe on the chassis (ground), touch the other end of the lead on one of the capacitor terminals leave for a few seconds.
- Repeat with second terminal to chassis
- NOTE: The discharge lead should have a nominal resistance of 270Ω which should be checked on a regular basis

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Capacitor Test Procedure

- Switch off appliance
- **Discharge High Voltage Capacitor**
- Remove leads (Noting there position)
- Put your meter on the highest Resistance ohm scale
- Connect across the two capacitor terminals. The reading should increase and then slowly decrease as the capacitor is charged.
- Reverse the leads and the effect should be repeated.
- If you have a meter with a capacitor test feature use this and the meter should read approx 1.2μF

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Magnetron Test Procedure

- Switch off appliance
- **Discharge High Voltage Capacitor**
- Disconnect plug from magnetron
- Using the resistance reading on the meter check across the two terminals of the magnetron, this should read less than 1 ohm
- Check the reading from each terminal to the magnetron casing, this should read infinity.

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High Voltage Transformer Test

- Switch off appliance
- **Discharge High Voltage Capacitor**
- Disconnect primary winding connections (Blue and Orange), unplug from magnetron and remove leads from capacitor (Noting lead connections)
- Set meter to read resistance
- Primary winding (6.3mm Male terminals) – Approx 2 ohms
- Filament Coil (Leads on molex plug) – less than 1 ohm
- High Voltage Secondary (Single red lead from transformer with 6.3 receptacle to body of transformer)– Approx 90 ohms (Note: Ensure insulation on transformer body is cleared to obtain a true reading.)

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Diode Test Procedure

- Switch off appliance
- **Discharge High Voltage Capacitor**
- Disconnect the diode (Noting the connections)
- Using a Insulation Resistance meter (Megger) put the leads across the diode and test, reverse the leads and retest, continuity (closed circuit) should be seen in one direction and infinity (open circuit) in the other.

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Fault Codes

- F1 – Main Oven RTD Failure
- F2 – Top Oven RTD Failure
- F3 – Thermal Cut Out Operated
- F4 – Low Voltage Transformer Polarity

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RTD Test Procedure (F1, F2)

- Switch off appliance at the mains
- Disconnect the RTD
- Set the meter to read resistance (ohms)
- Check the resistance of the RTD by placing the leads across the Molex plug.
- The resistance should read approximately 1000 ohms (1kohm)
- Note: The resistance should increase with temperature.

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Thermal Cut Out Test Procedure (F3)

- These cut outs are for fan fail scenarios
- Switch off appliance
- **Discharge High Voltage Capacitor**
- Remove Molex plug from CT29
- Set the meter to read resistance (ohms)
- The meter should read zero or short circuit.

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Low Voltage Transformer Test

- Switch off appliance
- **Discharge High Voltage Capacitor**
- Disconnect Low Voltage Transformer Molex plug from CT15
- Set meter to read resistance (ohms)
- Primary Winding (Brown – Blue) – 30Ω
- Secondary Winding (Orange – Black) – 0.5Ω

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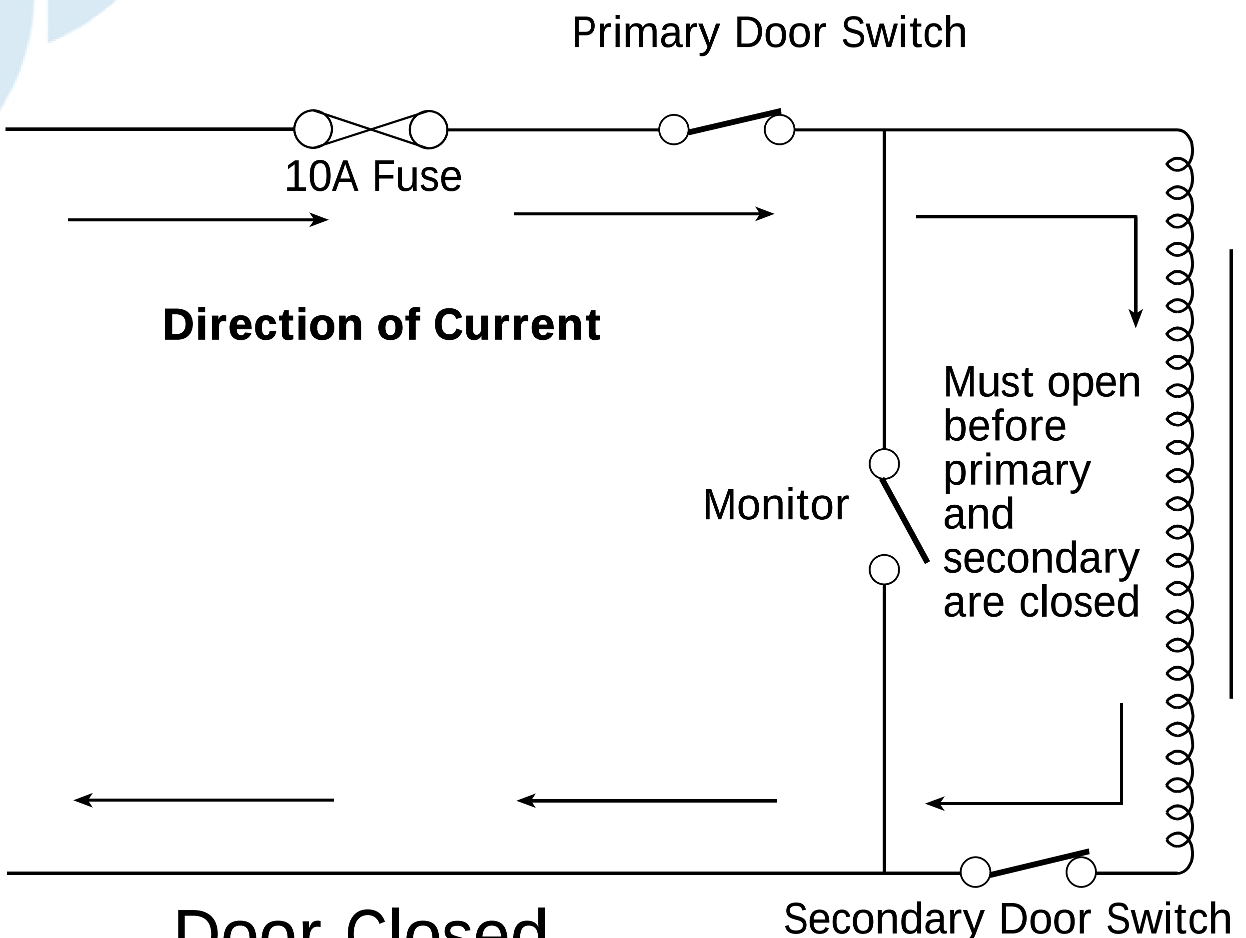
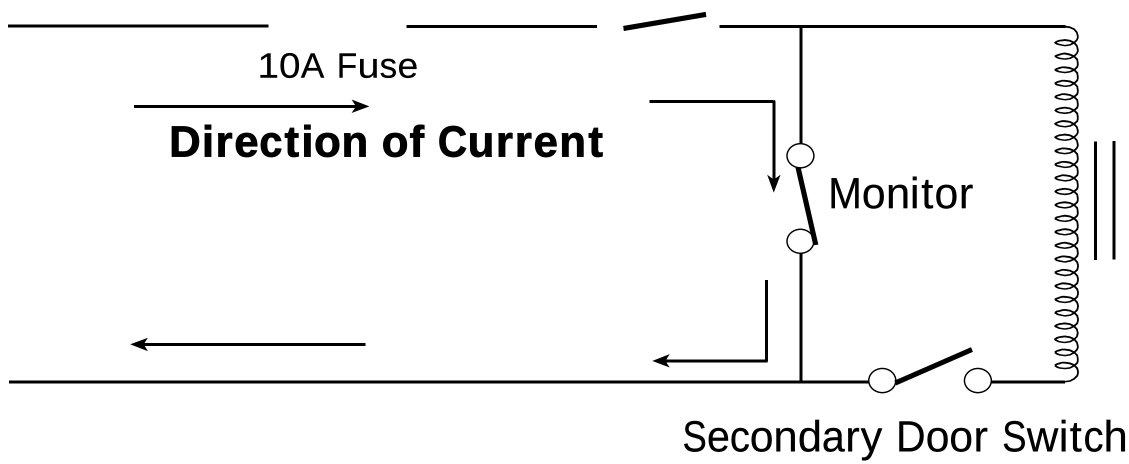
Door Safety Circuit



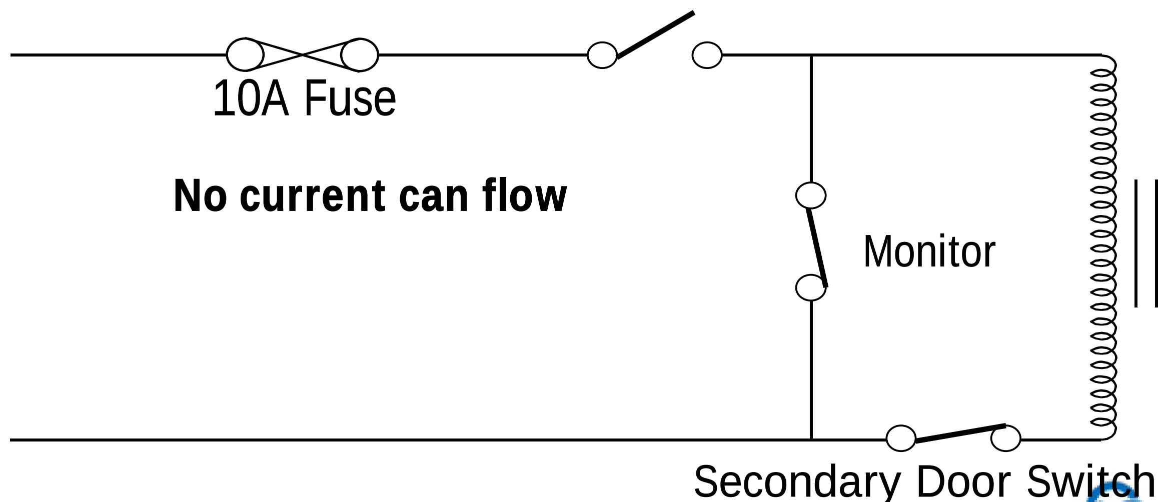
Door Closed

Door Safety Circuit

Failure of Primary and Monitor
Monitor and Primary closed, secondary open- Creates a short circuit and blows the fuse.



Failure of Secondary
Primary open, monitor closed, Secondary closed.
No current can flow



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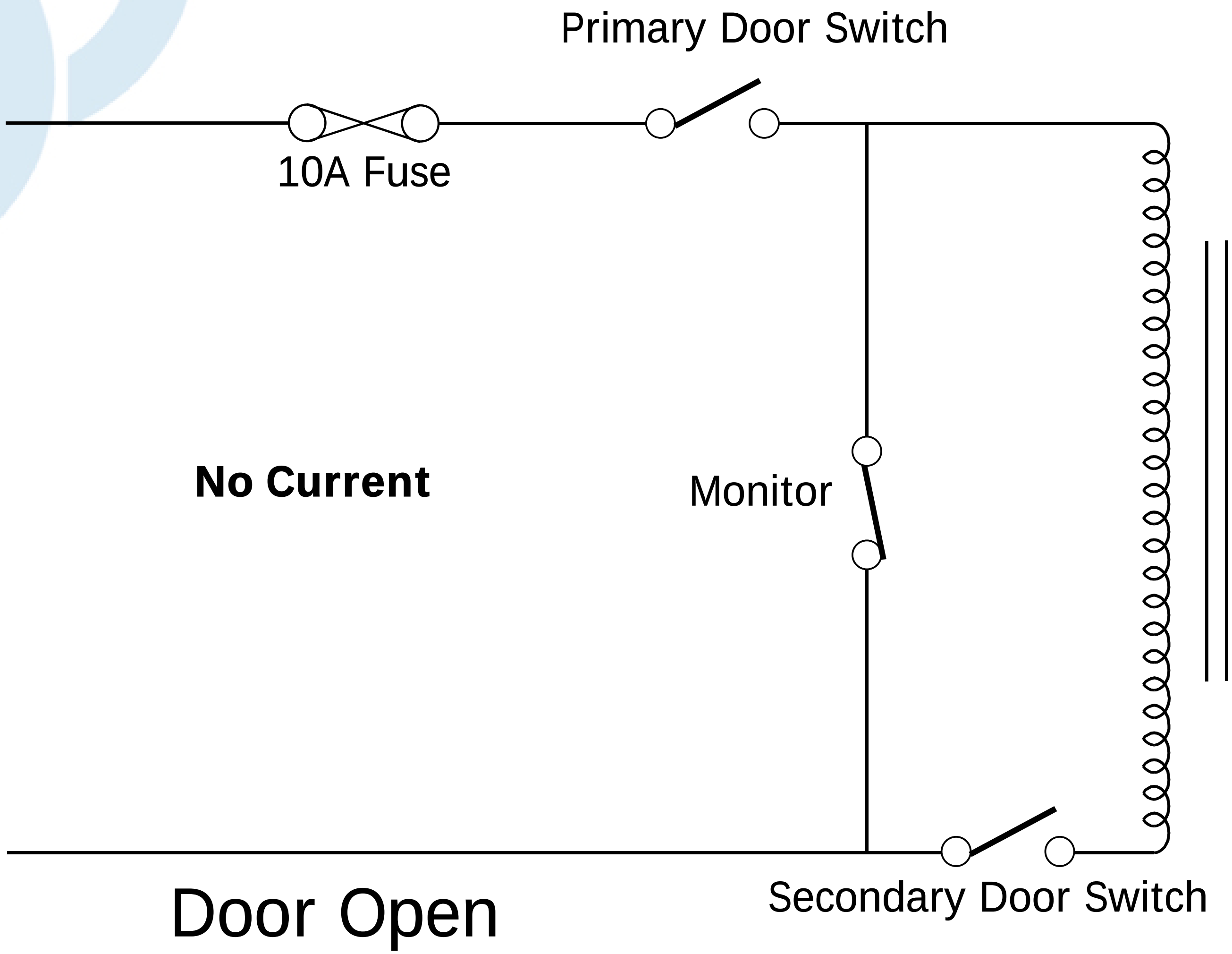
Door Safety Circuit



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Door Safety Circuit Test

- Switch off appliance at the mains
- **Discharge High Voltage Capacitor**
- Disconnect the door safety circuit from the power board (remove CT19 and white lead from CT22)
- With the meter set to read resistance you should get a short circuit across these two connections when the door is closed and an open circuit when the door is open.
- If an open circuit is detected the problem could be with the door switch assembly or the magnetron thermal cut out.
- NOTE: If the fault is that the appliance is flashing door when it is closed this could be due to the magnetron thermal cut out, power board, ribbon cable or fascia pcb.

Recommended Parts List

- PCBA Fascia - 012550437
- PCB Power Board - 082572700
- Frequency Stir Blade - 0825665-00
- Door Microswitch Assembly - 082575800
- Low Voltage Transformer - 082573700
- Main Oven Lamps - 082573200
- Stir Motor - 0825700-00
- 2A Fuse (T250V)- Electronics
- 10A Fuse (250V) – Door Monitor

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Safety

- Where possible switch off appliance before starting work.
- **WITH POWER OFF ALWAYS DISCHARGE THE HIGH VOLTAGE CAPACITOR**
- Leave yourself enough space to work around the appliance.
- Check the leakage BEFORE and AFTER repairing the appliance.
- Check the operation of the door safety switch before leaving the appliance.
- Wear relevant PPE (Gloves etc)

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REMEMBER

- Be safe not sorry
- Most work can be done with the appliance off
- If the anti tamper label has been removed proceed with caution. Has somebody tampered with the appliance!
- The ‘Low Voltage’ can be just as lethal as the ‘High Voltage’
- Check Leakage before leaving appliance
- Reapply anti tamper label to casing when work is complete

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Wiring & Circuit Diagrams

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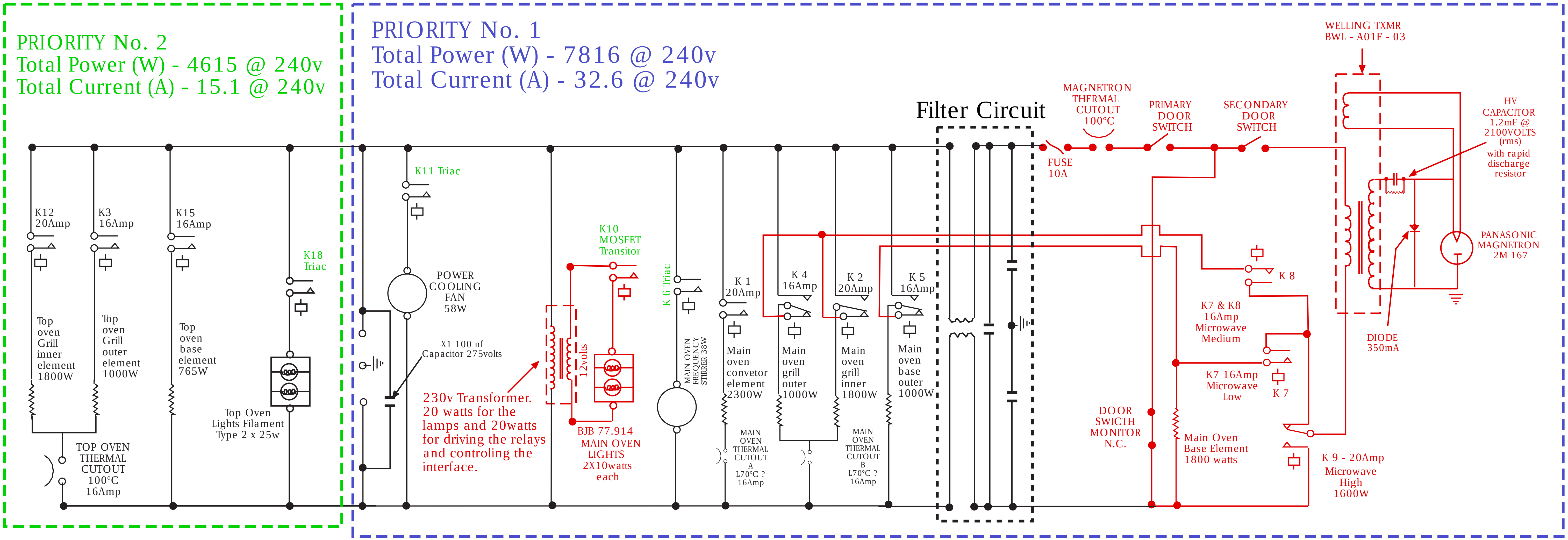
900 ELECTRIC RAPID COOK
ISSUE II CIRCUIT DIAGRAM
02/03/2005



PROVISIONAL SWITCH IDENTIFICATION:

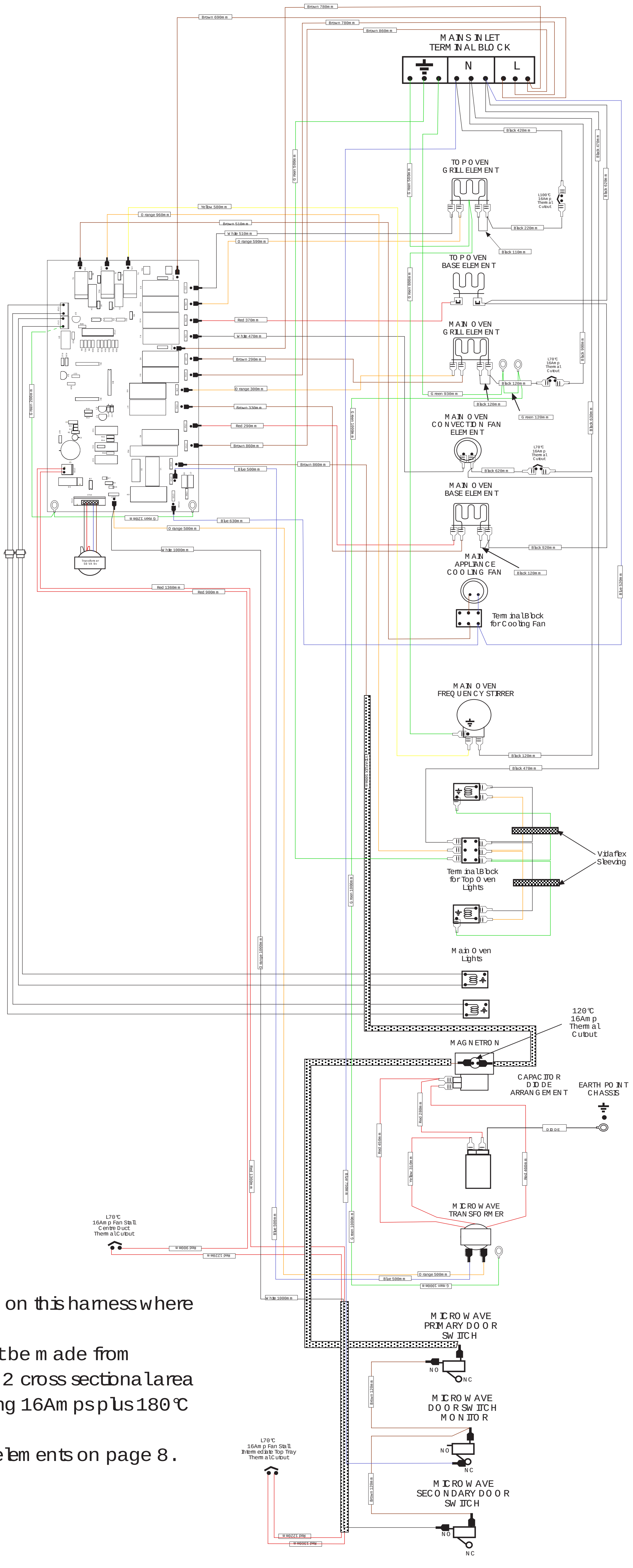
RED HIGHLITES INDICATE MICROWAVE CIRCUIT.
GREEN HIGHLITES INDICATE NON RELAY SWITCHES

RELAY POWER OUTPUT (W)	230V	240V	256V	SAFE WORKING AT 256V
K 1 - 20Amp	2110W	2300W	2620W	
K 2 - 20Amp	1655W	1800W	2050W	
K 3 - 16Amp	920W	1000W	1135W	
K 4 - 16Amp	920W	1000W	1135W	
K 5 - 16Amp	920W	1000W	1135W	
K 6 Triac	53W	38W	66W	
K 7 - 16Amp	1655W	1800W	2050W	
K 8 - 16Amp	725W	790W	900W	
K 9 - 20Amp	1470W	1600W	1820W	
K10 - MOSFET Transitor	18W	20W	23W	
K11 - Triac	53W	58W	66W	
K 12 - 20Amp	1655W	1800W	2050W	
K15 - 16Amp	700W	765W	870W	
K18 - Triac	23W	25W	28W	

It is important that all components are garanteed for at least 200.000 life cycles @ 256volts

Note: All element power ratings are quoted at 240volts

Mark Hope: Technical Centre



Unless otherwise specified, all cable on this harness where the load (power in watts) carry's greater than 100Watts must be made from Silicon Elastima and have a 1.0mm 2 cross sectional area It must also be capable of withstanding 16Amps plus 180°C continuous.

If in doubt check power ratings of elements on page 8.